THE ENGINEERING AND MINING JOURNAL AND COAL

Entered at the Post-Office of New York, N. Y., as Second-Class Mail Matter.

VOL. LVI. SEPTEMBER 30. No. 14.

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SOPHIA BRAEUNLICH, Business Manager.

THE SCIENTIFIC PUBLISHING CO., Publishers.

SUBSCRIPTION PRICE: For the United States, Mexico and Canada, $5 per annum; $2.50 for six months; all other countries in the Postal Union, $7.

ADVERTISING RATES furnished on application.

REMITTANCES should always be made by Bank Drafts, Post-Office Orders or Express Money Orders on New York, payable to THE SCIENTIFIC PUBLISHING CO. All payments must be made in advance.

NOTICE OF DISCONTINUANCE.—The ENGINEERING AND MINING JOURNAL is sent to subscribers until an explicit order for its discontinuance is received by us, and all dayment of arrearages is made, as required by law. *Papers returned are not notices of discontinuance.*

THE SCIENTIFIC PUBLISHING COMPANY.

OFFICERS:
R. P. ROTHWELL, Pres. & Gen'l Mang.
SOPHIA BRAEUNLICH, SEC'Y & TREAS.

P. O. BOX 1833.
27 Park Place, New York.

Cable Address: "Rothwell, New York." Use A B C Code, Fourth Edition.

LONDON OFFICE:
20 Bucklersbury (Room 366), London, E. C., England.
Edward Walker, Manager.

CHICAGO OFFICE: "The Rookery," Room 531.

HEADQUARTERS AT THE WORLD'S COLUMBIAN EXPOSITION:
Mining Building, Montana Pavilion, Bullion Boulevard.
Machinery Hall, Section K, Aisle 37 (Central Aisle).

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THE English coal miners are not alone in their dissatisfaction with existing conditions, and their action has been imitated by the miners of the Department du Nord, one of the chief coal producing districts of France, who last week resolved upon a strike, and immediately acted on this resolution. The Belgian coal miners are also preparing for a general strike, and it seems probable that the coming week will see many of the coal mines of that country also idle.

THE appointment of Mr. ROBERT E. PRESTON to be Director of the Mint is an excellent one in every respect, and a deserved promotion of a faithful and efficient officer. Mr. PRESTON'S long and excellent service in the mint has made him familiar with the duties of this responsible position, while his well known high character is guarantee that the United States Mint will be kept out of politics, and will retain the high and honorable reputation which it has long enjoyed.

THE number of defalcations in business recently reported is one of the symptoms which almost invariably accompanies a panic season. In flush times it may be possible for a bank cashier or the trusted bookkeeper of a business concern to cover up his dishonest transactions, but a financial strain is sure to make it impossible to continue to carry a deficit, and thus the robbery is brought to light. It is not the panic but the boom which incites to extravagance and dishonesty; but the discovery comes with the hard times, and the present is no exception to the general rule.

SOME of our English contemporaries have called attention to the prevailing low prices of pig iron in this country, and have warned their own ironmasters that if such rates continue it is possible that the United States may begin to compete with England as an iron exporting country. A comparison of current quotations gives point to this suggestion. So far, however, there has been no considerable movement in this direction, and our own furnacemen do not seem ready to begin the competition. The low prices of pig iron will promote the export trade in manufactures of iron which is already somewhat important and is increasing. The day is not distant when the United States will be the workshop for a large part of the world, and the present great depression in the iron business is hastening that day.

THE statement is made, and without giving exact figures it is probably nearly correct, that ordinarily the Lake steamers carry about 75 per cent. of the anthracite coal brought to Chicago, and on an average probably somewhere from 85 to 90 per cent. of the anthracite going to the Lake ports from which the Northwest receives its supply of that fuel. Up to date, however, Lake shipments have been but little over 40 per cent. of the usual amount and it is hardly possible that during the few remaining weeks of the season the vessels can carry the balance necessary to make up the usual amount of tonnage. If, therefore, the West burns as much anthracite as it did in the winter of 1892–93, the coal must be carried by rail, promising an unusually large tonnage of that description. It should be remembered, however, that outside of one or two of the large cities anthracite in the West may be regarded as an article of luxury,

THE great strike of the English coal miners continues, and but little disposition to settle the questions in controversy is shown by either side, for although the last vote taken by the miners showed a considerable minority in favor of a compromise, the majority was still strong and determined. The partial stoppage of the coal output is beginning to be seriously felt; in London and other large cities the prices of coal have gone up to an unprecedented point, while in some of the Midland and Northern districts actual distress for want of fuel is reported. The iron trade is suffering from the strike, and a number of furnaces have gone out of blast, being unable to secure their regular supplies of coal. The English papers are full of calculations as to the losses caused daily by the strike, prominent among them being the great decrease in railroad traffic. The strikers have, of course, suffered, but have received some help from a loan of £16,000, which has been made to their association. This somewhat novel financial transaction was made possible by the assistance of several Liberal members of Parliament, who guaranteed the repayment of the loan, if the cable dispatches are to be relied on.

THE PRESIDENT'S LETTER.

The various rumors of a possible compromise on the silver question, which have been started by the silver advocates, and the reports that such a course might receive favor from the Executive, have been set at rest by a letter written by the President in reply to a communication containing some inquiries from Governor NORTHEN, of Georgia. The letter is of such importance that we give it below in full:

"I hardly know how to reply to your letter of the 15th inst. It seems to me that I am quite plainly on record concerning the financial question. My letter accepting the nomination to the presidency, when read in connection with the message lately sent to the Congress in extraordinary

session, appears to me to be very explicit. I want a currency that is stable and safe in the hands of our people. I will not knowingly be implicated in a condition that will justly make me in the least degree answerable to any laborer or farmer in the United States for a shrinkage in the purchasing power of the dollar he has received for a full dollar's worth of work or for a good dollar's worth of the product of his toil. I not only want our currency to be of such character that all kinds of dollars will be of equal purchasing power at home, but I want it to be of such a character as will demonstrate abroad our wisdom and good faith, thus placing upon a firm foundation our credit among the nations of the earth. I want our financial conditions and the laws relating to our currency safe and reassuring, that those who have money will spend and invest it in business and new enterprises instead of hoarding it. You cannot cure fright by calling it foolish and unreasonable, and you cannot prevent the frightened man from hoarding his money. I want good, sound and stable money and a condition of confidence that will keep it in use.

"Within the limits of what I have written I am a friend of silver, but I believe its proper place in our currency can only be fixed by a readjustment of our currency legislation and the inauguration of a consistent and comprehensive financial scheme. I think such a thing can only be entered upon profitably and hopefully after the repeal of the law which is charged with all our financial woes. In the present state of the public mind this law cannot be built upon nor patched in such a way as to relieve the situation.

"I am therefore opposed to the free and unlimited coinage of silver by this country alone and independently, and I am in favor of the immediate and unconditional repeal of the purchasing clause of the so-called Sherman law.

"I confess I am astonished by the opposition in the Senate to such prompt action as would relieve the present unfortunate situation.

"My daily prayer is that the delay occasioned by such opposition may not be the cause of plunging the country into deeper depression than it has yet known, and that the Democratic party may not be justly held responsible for such a catastrophe."

In this letter it will be seen that Mr. CLEVELAND speaks with his usua directness and that he leaves free from all doubt his position on the question. He takes particular pains to say that his views have not changed, and that he is as much opposed to compromise now as ever, and that he still believes that nothing can be done in the way of adjusting the currency question until the repeal of the silver purchase law is completed. He also, it will be noted, takes pains to say that he is a friend to silver He realizes as fully as ever the necessity of restoring confidence, and that this restoration will not begin until the action referred to is taken. It is to be hoped that the silver Senators, who are certainly delaying the return of confidence in business, and also the majority, who really hold the whole question in their hands, will realize the necessity of prompt action, and will support the President; and at the same time second the public opinion of the country by prompt action in repealing the silver purchase act.

CLEARING HOUSES.

A clearing house may be defined as an institution in which mutual claims are settled by the payment of the differences or balances. This system, which originated in London about one hundred years ago, probably had its beginnings in the exchange of checks and drafts between a few of the most important banks. The advantages arising from it were at first but slowly appreciated, but there came a time early in the present century when the increasing volume of transactions of the metropolitan banks rendered the use of some such method of handling checks absolutely imperative.

The first proposition to establish a clearing house in the United States came from Mr ALBERT GALLATIN, who published in 1841 a pamphlet entitled, "Suggestions on the Banks and Currency," in which he strongly urged the establishment of a general cash office in which each bank should place a sum to its credit proportionate to its capital. Each bank was to be daily debited or credited for the balance of its account with all the other banks, and it might at any time withdraw the excess of its credit. This contains the germ of the present system of the Clearing House in this country. Later, in 1853, the New York banks appointed a committee on organization and in that same year the present association was formed. Since then the system has been adopted by the banks of other cities, and at present there is one in every large city of this country and Europe. More than that its advantages, among which may be mentioned division of responsibility and saving of time, are so great that the system has been applied in a modified form to transactions other than those of money, such, for instance, as the clearing of stocks.

The system of clearing differs considerably in detail among the different associations, but the principles involved are the same for all. Each bank member sends daily to the Clearing House two clerks, one designated as as a settling clerk, who receives the exchanges from the other banks, and the other a delivery clerk, who distributes the exchanges.

At a fixed hour the operation is made in the presence of the manager, his assistant and proof clerk, and the exchange of balances is rapidly made. After they are completed the proof sheet can be at once made.

It is easily understood that the credits and debits on the proof sheet should be the same, as should likewise the balances, and it is cheeked by the footings of clerks of each bank. Various means are taken to discover and correct errors, but of these it is unnecessary to speak here.

The proof sheet shows which are creditor banks and which are debtor banks. These latter then pay into the Clearing House the amounts owed by them, following which the creditor banks receive the sums due them.

The great convenience of this method of paying balances is at once seen when the magnitude of the exchanges effected are understood. For some years past in New York about 4,000 packages of checks have been daily exchanged and receipted for in about 10 minutes without loss or error. The amount of exchanges so handled averages about $120,000,000 daily, all settled by the payment of only $5,000,000 to $7,000,000, or say 5 per cent. of the actual amount of the transactions. From the organization of the association up to 1890, the total exchanges amounted to $878.-602,922,007; the total balances paid amounted to $39,086,454,205, or about 4·5 per cen.

There are certain features of the New York association which are of particular interest in connection with the formation of an International Monetary Clearing House, such as we have proposed in the columns of this JOURNAL. As the association is purely voluntary, it is necessary for the safety of all that each bank shall be conservative in its enterprises. To ensure this, the constitution of the association requires that each bank shall furnish weekly to the manager a statement of its condition *for publication* showing the average amount of loans and discounts, specie, legal tender notes, circulation and deposits. Failure to comply renders the bank liable to suspension. In the light of this publicity wild-cat banking is impossible.

The Soapstone Industry of China.—The British Consul at Wenchow, in his last report, gives some interesting details respecting the manufacture of steatite or soapstone ornaments in China. The mines are distant 42 miles from Wenchow, and are reached by a boat journey of 35 miles up the river, followed by a land journey of seven miles over rough ground. The hills containing steatite are owned by 20 to 30 families, who in some cases work the mines themselves, in others engage miners to do it on their account. The galleries are driven into the sides of the hills, and are often nearly a mile in length. The composition of the hills is soft, and the shafts require to be propped up by supports of timber; for the same reason the floors are full of mire and clay, so that the miners wear special clothing, made principally of rhea fibre. They lead a hard life, living in straw huts on the hillside. The stone when first extracted is soft, hardening on exposure to the air. It is brought out of the mine in shovels, and is sold at the pit mouth to the carvers at a uniform price of about ½d. per lb. This would be when the purchaser buys it in gross, without first selecting it in any way. When picked over the mineral varies very considerably in value—according to the size of the lump, its shape, and, above all, its colors. The colors are given as purple red, mottled red, black, dark blue, light blue, gray, white, eggshell white, "jade," beeswax and "frozen." Of these "jade" (the white variety, not the green) and "frozen" are the most valuable. Indeed so valuable is the latter that good specimens of it are said to fetch more than real jade itself. The industry finds employment at the present time for some 2,000 miners and carvers. A great impetus was given to it by the opening of Wenchow to foreign trade. Previous to that event the chief purchasers of soapstone were officials and literary men, and the article most often carved was a stamp or seal. When it was discovered that foreigners admired the stone, articles were produced to meet what was supposed to be their taste. Such were landscapes in low or high relief, flower vases, plates, card trays, fruit dishes, cups, teapots and pagodas. If left to his own devices the native carver proceeds first to examine his stone, much as a cameo cutter would do, to discover how best he can take advantage of its shape and shades of color.

Estimation of Arsenic.—At the meeting of the London Chemical Society, held on May 4th, Dr. John Clark read a paper criticising the methods of selecting arsenic and estimating it quantitatively. Among other things he stated that he has not been able to volatalize the slightest trace of arsenic by heating arsenate of soda with a large excess of pure aluminum and caustic soda, so that Fresenius' statement that Gatehouse's modification of Fleitmann's method indicates arsenic acid does not hold good. Dr. Clark attributes Fresenius' results to the use of impure aluminum or to the presence of arsenious acid in the arsenic acid. Dr. Clark also finds that arsenic acid in an alkaline solution resists the action of sodium amalgam, and he concludes from this that none of the methods that have been proposed for the generation of arseniuretted hydrogen in an alkaline solution detect arsenic acid. The author then proceeded to discuss some improvements in Reinsch's process. This process is capable of demonstrating the presence of very minute quantities of arsenic, and it withdraws absolutely every trace of arsenic from organic mixtures. There are two objections to its use, however. Firstly, when the quantity of arsenic is small, a stain is obtained which it is sometimes difficult to identify as arsenic, because the coated copper, when heated, is apt to give a layer of chloride of copper and organic matter instead of arsenious acid. Secondly, it is not suitable for the quantitative estimation of arsenic, as it is not possible by means of heat to volatilize the whole of the arsenic from the copper. Dr. Clark's improvements consist of identifying the arsenic or antimony on the copper with greater certainty, and at the same time estimating the amount of each when they occur together. For this purpose he digests the coated copper in a cold mixture of dilute caustic potash and peroxide of hydrogen, which dissolves the arsenic and antimony and converts them into arsenate and antimonate of potash. The solution is then boiled and filtered to get rid of the oxide of copper; then evaporated to small bulk and distilled with ferrous chloride and strong chlorhydric acid. The distillate is then saturated with sulphuretted hydrogen, and the arsenic weighed as sulphide, after being freed from traces of sulphur by washing with carbon bisulphide and alcohol. The residual liquid, from which the arsenic has thus been removed by distillation is then tested for antimony.

NEW PUBLICATIONS.

BOLIVIA. BULLETIN No. 55. Washington, D. C.; Bureau of the American Republics. Pages 416; illustrated, with map.

This volume, like those issued upon other South American States, gives, in condensed form, information concerning the geography, history, resources and politics of the country. The part relating to mining is hardly satisfactory, because much valuable information, that might have easily been obtained, is conspicuous by its absence. Complaint is made that statistics of the production of gold and silver could not be procured. This is true so far as the governments are concerned, but the subject has been thoroughly studied by a number of eminent statisticians, chief among whom we place the late Dr. Soetbear, and in default of official figures, the estimates of Soetbeer, Humboldt, Chevalier and others, should have been given. This has been done in the "Mineral Industry," and the whole brought up to date. We think, too, that the bureau should have availed itself of the knowledge of such American engineers as Wendt, Olcott and Peale, who have been in the country. In the various appendices are given the Bolivian Constitution; a commercial directory; the Bolivian import duties and other notes which will prove of great advantage to our exporting merchants; also the Bolivian mining and patent laws.

PROFIT SHARING BETWEEN EMPLOYER AND EMPLOYEE. By Nicholas Paine Gilman. Boston and New York; Houghton, Mifflin & Co. Pages 460.

This is a book with which economists are familiar, and which has received warm praise from them. It is not an abstruse treatise, however, written only for the professors. On the contrary, it is simply a plain, straightforward description of the system of wage distribution to which the name "Profit-sharing" has been given, which is intended for the student, and most of all for the business man. It does not go into the discussion of abstract questions, and it is pre-eminently practical in its treatment of the subject.

It is therefore a book which should be read by every employer of labor, and it will be read with interest, we are sure, for aside from the attractiveness of the subject, the author's style is pleasant and easily engages the attention of the reader.

The plan of the book, which is the more important from the fact that it is an embodiment of all the recent literature on profit-sharing, is admirable in its simplicity and directness. Two preliminary chapters, after the introduction, are devoted to a brief summary of the past and present methods of rewarding labor, describing the primitive system of product-sharing, which still obtains in some of the fundamental branches of industry, like agriculture, fishing and mining; and the wages system in its various forms—time wages, piecework, quality prizes, percentages on sales, economy prizes, and sliding scales. Mr. Gilman might have multiplied his instances of product-sharing in mining by referring to the tribute system, which is widely and successfully used in our Western States. We think also that he might have made another class of wage-payments in the fine and premium plan, which is adopted in very many trades and very often in certain branches of the metallurgical industry, especially on the Continent.

In taking up the systems of profit-sharing proper in the book under discussion, Mr. Gilman describes briefly the various plans that have been tried up to 1889, and are still in operation, beginning with the introduction of the system in 1842 at the famous Maison Leclaire, in Paris. These instances are grouped by countries and by trades. One chapter is devoted to past instances, wherein the system has been applied and abandoned. The whole is followed by a summary, which shows that in 1889 there were 135 cases in which profit-sharing was in operation, of which 129 were in their second year or more; of these seven had had more than 40 years' trial, five more than 30 years', 14 more than 20 years', and 30 more than 15 years'. Grouping by countries, it appeared that there were 57 instances in France, 10 in Switzerland, 18 in Germany, eight in England, eight in other European countries and 32 in the United States. We are inclined to doubt, however, if this list is complete; for, although the author has evidently been most painstaking, it must be exceedingly difficult to learn all the establishments, including the minor ones, at which the system is in use. At any rate, there has been a great increase in number during the past five years.

Mr. Gilman gives 36 cases where profit-sharing has been tried and is not now in force; of these it operated successfully in nine, and was discontinued for reasons not affecting the principle or the main details of its application. There were 13 cases in which the system was abandoned within two and one-half years of its introduction, which, of course, did not give a sufficiently long trial. In the 14 remaining cases the failure was due to such various causes that it would be impossible to classify them—some of them being attributable to the employers and some to the workmen.

Mr. Gilman concludes his book with a summary and analysis of past and present experience in profit-sharing, and an argument in favor of the practice, in which he makes some excellent points.

Not the least valuable feature of Mr. Gilman's book, which we have discussed in this article, is the bibliography, which he appends to it. The complete and careful index also deserves commendation.

BOOKS RECEIVED.

In sending books for notice, will publishers, for their own sake and for that of book buyers, give the retail price? These notices do not supersede review in another page of the Journal.

Bolivia: Bulletin No. 55. Washington; Bureau of the American Republics. Pages, 416; illustrated.

The Massachusetts Institute of Technology. Boston, Mass.; published by the Institute. Pages, 40; illustrated.

Department of Street Cleaning of the City of New York: Report. W. S. Andrews, Commissioner. New York; published by the city. Pamphlet, pages 16.

The Engineering Society Annual. O. H. Sheffield, Editor. Athens, Ga.; Published by the Engineering Society of the University of Georgia. Pages, 88; illustrated.

The Gothenburg System of Liquor Traffic: Special Report to the Commissioner of Labor. By E. R. L. Gould, Ph. D. Washington; Government Printing Office. Pages, 248.

Petroleum, Its Production and Products. By H. C. Folger, Jr. Advance Sheets from Report of the Secretary of Internal Affairs of Pennsylvania. Harrisburg, Pa.; State Printers. Pages 208.

Progress of Geological Surveys in the State of Wisconsin. By William P. Blake. Madison, Wis.; Reprinted from "Proceedings" of the Wisconsin Academy of Sciences. Pamphlet; pages, 8.

Geological Survey of Texas: 1. *Report on the Cretaceous Area North of the Colorado.* By J. A. Taff and S. Leverett. 2. *Report on the Colorado Coal Field.* By N. F. Drake and R. A. Thompson. Austin, Tex.; State Printer. Pages 108 and 130; illustrated.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.
All letters should be addressed to the MANAGING EDITOR.
We do not hold ourselves responsible for the opinions expressed by correspondents.

Determination of Sulphur by Oxidation

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: In sulphur determination the usual method of oxidizing sulphur in the wet way consists in the use of hydrochloric and nitric acid or hydrochloric acid and chlorate of potassium. The oxidation by the latter method is violent and not reliable. The first method recommended by Professor Lunge is only adapted for pyrites. I have for a long time used a method which replaces hydrochloric acid by chloride of sodium. Half a gram of sulphide is mixed with one to five parts its amount of dry, fine-grained chloride of sodium; this mixture is poured slowly into a dish containing 5-10 cc. strong nitric acid. If the reaction proceeds violently sulphur separates out, and to avoid this the nitric acid is kept cool by placing the dish in a pan of cold water. By this precaution the reaction proceeds regularly and the oxidation is complete. Iron sulphides oxidize readily. Copper and zinc sulphides require more time and care to prevent the separation of sulphur.

EL PASO, Tex., August 31, 1893. P. FLURY.

Determination of Phosphorus by the Molybdenum Method.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: Concerning the paragraph on "Determination of Phosphorus by the Molybdenum Method," which appears in your issue of September 16th, I beg to make the following note: In my opinion it is erroneous to call the turbidity which is formed upon dissolving the ammonium phospho-mobybdate in ammonia "an impurity." I am well aware of the fact that some of our best authorities and writers have called that turbidity "silica," and have recommended its separation by warming the solution, when it becomes flocculent, and filtering it off. I think I may say that by so doing they invariably introduce a source of error, and a loss in phosphorus amounting to some thousandths of 1%, dependent upon the amount of the turbidity.

I have examined this turbidity, misnamed impurity, in a large number of cases, and have invariably found it to contain both phosphorus and iron. If, after warming the solution after the turbidity becomes flocculent, and then filtering it off, and washing it thoroughly, it be dissolved in dilute nitric acid, and tested with molybdate solution, it always precipitates the ammonium phospho-molybdate salt. Dissolved in hydrochloric acid and tested with the sulpho-cyanate salt, it shows iron.

The turbidity, then, consists, I think, of a phosphate of iron, formed by the contact of ammonium phosphate and minutely divided ferric hydrate upon dissolving the ammonium-molybdate salt in ammonia. The presence of the iron salt is due to incomplete washing of the ammonium phospho-molybdate before dissolving in ammonia. I may say that I refer particularly to the analyses of furnace products, and entirely obviate the formation of this precipitate, or turbidity, by adding citrate of ammonia to the ammonia, which dissolves the ammonium phospho-molybdate. The citric acid, acting upon the traces of iron, keeps it in solution. The filter paper washes out absolutely free from iron stains, there is no turbidity whatever in the filtrate, and the resultant magnesium pyro-phosphate formed upon ignition is absolutely white, and not "almost white," nor does it show a sign of molybdenum.

To either remove this turbidity by warming and filtering, or allow it to remain, introduces an error. If it is filtered and the phosphorus not recovered from it, the results are low; if it is allowed to remain it is weighed as ferric pyro-phosphate along with the magnesium pyro-phosphate, and is the reason for the ignition not being white.

F. G. MYHLERTZ, Chemist Norristown Furnace Company.
NORRISTOWN, Pa., Sept. 18, 1893.

Nickel Steel.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: In your issue of August 26th last Mr. Garnier, of Paris, speaking of nickel-steel, states that it is said to be too expensive at present for extended use, but adds that as an offset to the cost the properties of the alloy permit the use of a very materially decreased weight for specific purposes as against "common" steel. Now, as the price of this alloy cannot be charged to the rarity of the element nickel, for it is known to exist in quantity at several places in the United States, apart from the very extensive deposits of Canada, not to mention the many other foreign localities, it must, therefore, lie in the method of its manufacture. In Mr. Garnier's article we are given to understand that in the St. Chamond steel works the alloy is prepared by introducing metallic nickel into the steel, whereas manufacturers in this

country accomplish the same purpose by the addition of nickel oxide. In either case pure nickel, or its oxide, is first prepared from the usually complex ores in which it occurs in nature by a long series of wet and dry processes, both time-consuming and costly, before it is alloyed with the steel. It is the preparatory manufacture of pure nickel product which enhances the cost of the alloy so that at present prices it is effectually debarred from use in the arts, except in special cases such as in the manufacture of armor and guns for the Government.

But why is it necessary to prepare a pure metal, or oxide, in order to form an alloy with iron? Would not a ferro-nickel answer the purpose to which an alloy is put? Ferro-nickel is no novelty; Mr. Garnier himself made it in the blast furnace at Paris years ago, and in the article above referred to he speaks of preparing it in crucibles also. Specimens of this compound, presumably made out of Canadian ores, are displayed in the Emmens collection of nickel products at the Chicago World's Fair. Is there any reason why an alloy of iron and nickel such as referred to, which can be easily and cheaply prepared from the most complex ores, should not be employed in the manufacture of nickel steel? Is it absolutely essential that the nickel be introduced into the steel in the very expensive metallic or oxide forms?

It is well known that very small amounts of sulphur, arsenic or copper destroy the valuable characteristics of the alloy, and therefore no method of preparation can be successful in which these elements are not practically completely removed, but they can be as readily separated from ferro-nickel as from the metal or its oxide, and far more cheaply. Probably it is the presence of the elements named, as well as the percentages of silicon and carbon which are allowed to remain in the alloy, that give rise to what Mr. Garnier terms the "mystery of nickel steel." That the metallurgy of nickel has not kept pace with that of the other useful metals is evident from the prices quoted for that element in the market lists. The present methods in use are circuitous and far behind the times, and my experiments lead me to believe that they can be very much shortened and cheapened, at least in the case of the alloys of nickel. One preparation of nickel, ferro-nickel, can certainly be produced in a direct way at a price, per pound of nickel contents, very much below present market quotations for that metal.

In the matter of cobalt being able to replace nickel in nickel steel with equally good results, it would be interesting to know whether other investigators in this line have had a similar experience to that of Mr. Garnier's with the alloy.

DENVER, Colo., September 11, 1893. W. L. AUSTIN.

The Cost of Silver and a Tax On Its Importation.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: On page 173 of the "Mineral Industry," concerning the cost of production of silver, you say: "155 mines in the United States produced 17,655,387 oz. silver in 1887 at a cost of 52·4 cts. per oz. . . . In 1890, 17,757,025 oz. were produced from silver mines proper, at a cost of 50·6 cts. per oz. (not including interest on capital invested). . . . . The total production of silver in the United States in 1892 was, in round numbers, 60,000,000 oz., of which one-half was produced probably at an average cost of 65 cents per oz., and one-half at 90 cents per oz., or a general average of 77·5 cents."

Of course, you take no account of what money was spent on probably 1,000 prospects to find the 155 mines mentioned in the figures for 1887, nor of what might have been expended in prospecting and developing numberless "holes in the ground" to obtain the mines producing 17,757,025 oz. in 1890 at a cost of 50·6 cents per oz., or those producing 60,000,000 oz. in 1892 at an average cost of 77·5 cents (estimated). If those items were taken account of, I believe it would show the average cost of production of silver to be about $1.50 per oz. I have no reliable figures for the above beyond my own opinions founded on 13 years' residence and travel through the silver States, and the opinions of friends of larger experience than my own.

In looking through your otherwise very complete work I have failed to find any data on the cost of production of gold, which would be of great interest. But I have just seen the latest annual report of the Alaska-Treadwell gold mine, which produced last year about $720,000 in gold at a cost of $9.36 per oz. I have not seen any other reports, but think there are mines producing gold much cheaper. And certainly during the days of placer mining it was produced for as low as $5 per oz. in large quantities, and in extreme cases for probably 50 cents to $1 per oz. At the same time, counting what money is spent on prospects to discover mines that can produce gold profitably, it probably costs about $30 per oz. on an average to produce it—that is, in these days. Why should the cost of production cut any more figure in the production of silver than it does in the production of gold?

It is my personal opinion that more men lose money mining for either metal than win, but at the same time there are always enough winners to excite the cupidity of others, and that cupidity discovers new mines. With silver selling at 73 cents or thereabouts, though, there is no hope of discovering mines that can produce it at that figure, and there will be practically no new silver mines discovered in this country until the silver market improves very materially. This will cause an immense falling off in production and consequent higher prices owing to a scarcity of the metal. But if its use is to be restricted to subsidiary coinage and the arts, there might possibly be an over-production at even 73 cents. It is hard to make any prediction, beyond stating that the few mines that can produce silver profitably at the present market price will sooner or later be worked out, and in the meantime there will be no new mines discovered. It looks as though in that event silver mining in this country might cease entirely, and that we would get what little silver we might need from either Mexico or Peru or Bolivia. Apropos of this, it seems odd that Eastern gold advocates appear to prefer a State bank circulation to silver dollars or certificates!

Your "International Monetary Clearing House" plan would be an excellent one if only the larger nations of the earth could be prevailed upon to adopt it. To force them to adopt that or some similar plan could we not lay an "ad valorem" tax on all imports from European countries failing to adopt our coinage ratio between the two metals? While we have to settle our balances abroad in gold, let us discriminate against that drain. We have no Bank of England to raise the discount rate for us and so to keep gold at home, but we can compass the same thing by a heavy "ad valorem" tax on imports that would accomplish it by discouraging the imports. It could do us no harm and might do us some good. They could hardly retaliate, as they must have our breadstuffs, and of those they only buy from us what Russia and India cannot furnish. There may be some fatal objection to this idea, but a little discussion on it can do no harm. The idea was suggested by hearing speakers here in California argue in favor of "free coinage of American product and a duty on foreign silver equivalent to the difference between the market value of silver and the coinage value of $1.2929," which would not reach the people we are after at all. Europe has sent us very little silver, and probably never would send us any. We want Europe to take more of our silver at a higher price—that is, if Europe can be induced to do that and the market price of silver is raised to, say, $1.29 per oz. in consequence, then the whole question is settled, as the gold men claim they would not object to an "honest silver dollar."

England and Germany and France are fast ruining their South American trade now, and if they are joined by the United States in an attempt to force a gold standard on the whole world the distress will be world-wide and of the keenest description. It will be ruin! I have made no attempt to argue for free coinage. I suggest that you give us through your columns some figures on cost of gold production, and your objections to an "ad valorem" discriminating duty on European imports from countries refusing to join us in coining silver.

SAN FRANCISCO, Sept. 14, 1893. X.

The Deepest Bore-hole in the World.—This is at Paruschowitz, Kreis Rybnik, in Upper Silesia, Germany, and attained a depth of 2,000 meters on May 17th, 1893, the diameter of the hole at the bottom being 7 cm. (about 2·8 in). Drilling was then interrupted, pending a series of thermometrical observations, for which purpose the hole is being sunk. When these are completed drilling will be continued as far as possible. The rod of the drill used at Paruschowitz is composed of Mannesmann tubes, without which it is doubtful if the present great depth (through hard rock) could have been reached.

Molten Platinum as a Standard of Light.—The Imperial Physical Institute of Berlin has recently made a report on the feasibility of using molten platinum as a standard of light. It was Violle who first suggested as a unit of light the amount of light radiated by one square centimeter of molten platinum at the moment of solidification. The disadvantage of this method was, however, that in order to keep the platinum absolutely pure and its surface clean and smooth it was necessary to melt large quantities of the metal. Afterward Siemens proposed platinum foil at the instant of melting as a standard, but it was found by experiments that deviations of as much as 10% were quite frequent, chiefly on account of the tearing of the foil on melting. The Imperial Physical Institute has been trying to adopt Siemens' method by fixing the temperature of the platinum in some way independent of its melting point. They found that at any given temperature the ratio of the total radiation to that transmitted by a layer of water of a certain thickness was constant within 2% for plates of platinum of different thicknesses and from different sources. To measure the amounts of radiation a very delicate bolometer was constructed. A piece of platinum foil was welded to a piece of silver foil ten times its thickness, and the combined plate thus formed was rolled between copper rollers down to a thickness of 0.01 mm. It was then cut in a dividing engine so as to form a long continuous strip of 1 mm. breadth within a small area. Four such strips were mounted in a frame and freed from silver by etching with acid, leaving strips 0·001 mm. thick. When tested the bolometer was found to give very satisfactory results. The Institute is at present engaged in determining the absorptive action of water and of the quartz vessel containing it. It is also investigating the effect of impurities in the platinum.

Portland Cement Manufacture in China.—In the last British Consular report from Tientsin are described the works for the manufacture of Portland cement, which are situated at Tongshan, 80 miles form Tientsin. The plant is of the most modern description. The raw materials used are mountain limestone, fireclay, marl and a rough kind of China clay, all of which are found in the immediate neighborhood of the works. The fuel used is hard furnace coke made on the premises from the local bituminous coal. The limestone and clays are first of all to be reduced to an almost impalpable powder, which is then passed through the brush mill, whence it is pumped into the "backs," to be eventually molded into bricks for burning into cement in the kilns. The bricks are then transferred to the drying ovens and finally to the kilns for conversion into Portland cement clinker. Nothing but true clinker is found at the Tongshan works. The resulting Portland cement is of great density, 158 lbs. per bushel. The present output is 300 tons per week, and that is the limit of the capacity of the works. It is all used at the various works of the Imperial Government, very little finding its way into the hands of private consumers. The cement is guaranteed to stand a tensile strain of 400 lbs. per sq. in. after having been immersed in water for seven days. The technical work, including a large chemical laboratory and assay office, in which the minerals from the various mines and establishments of the Chinese Engineering and Mining Company as well as of the Government are analysed and assayed, is under the control of an English manager, whose sole foreign assistant is an English millwright. Owing to the severity of the winter it is impossible to do any mixing for four months in the year, so that the output is limited to about 9,500 tons per annum. The work goes on for 16 hours a day.

MINING AT THE COLUMBIAN EXPOSITION.

Specially Reported for the Engineering and Mining Journal.

THE MINERAL EXHIBIT OF THE RUSSIAN EMPIRE.

The Russian section in the Mines and Mining Building is on the west side, between the exhibits of Japan and the Argentine Republic. The engraving which we give herewith is a general view of the exhibit, which is attractively arranged and decorated. The articles shown have been carefully selected, with a view to illustrating the varied mineral resources of the country.

Taking the precious metals first in order, a prominent feature is a pyramid composed of three solid blocks, colored to represent gold, and to give in concrete form the total gold production of the country from 1745, the first year when such production is on record, to 1891, both inclusive. The base, or largest, block represents the production of East Siberia; the second that of European Russia, and the top that of West Siberia. The cubic contents of each block and the total production is as follows:

West Siberia	215 cu. ft.	109,990 kg.
European Russia	898 " "	458,844 "
East Siberia	2,147 " "	1,097,232 "
Total	3,260 cu. ft.	1,666,066 kg.

The individual exhibits do not include any specimens of gold or gold ores, but the Sadon mine and the Alaghire smelting works in the Caucasus show raw and concentrated ores, bar silver and lead. There are also silver and lead ores and some mineral specimens from the newly opened mine of Andrew Gleboff, in South Russia.

Copper ores, matte and copper are shown by the Mining Administration of the Caucasus and also by Siemens Brothers. The zinc mines of the Dombrowa basin are represented by a collective exhibit of zinc ores, metallic zinc, zinc-white and other products.

Of other metals the Mining Administration of South Russia has some specimens of cinnabar, and of manganese ore (pyrolusite). There are also samples of manganese ore from the Caucasus containing from 40 to 56% metallic manganese. Nickel and cobalt ores are shown from the Caucasus and South Russia.

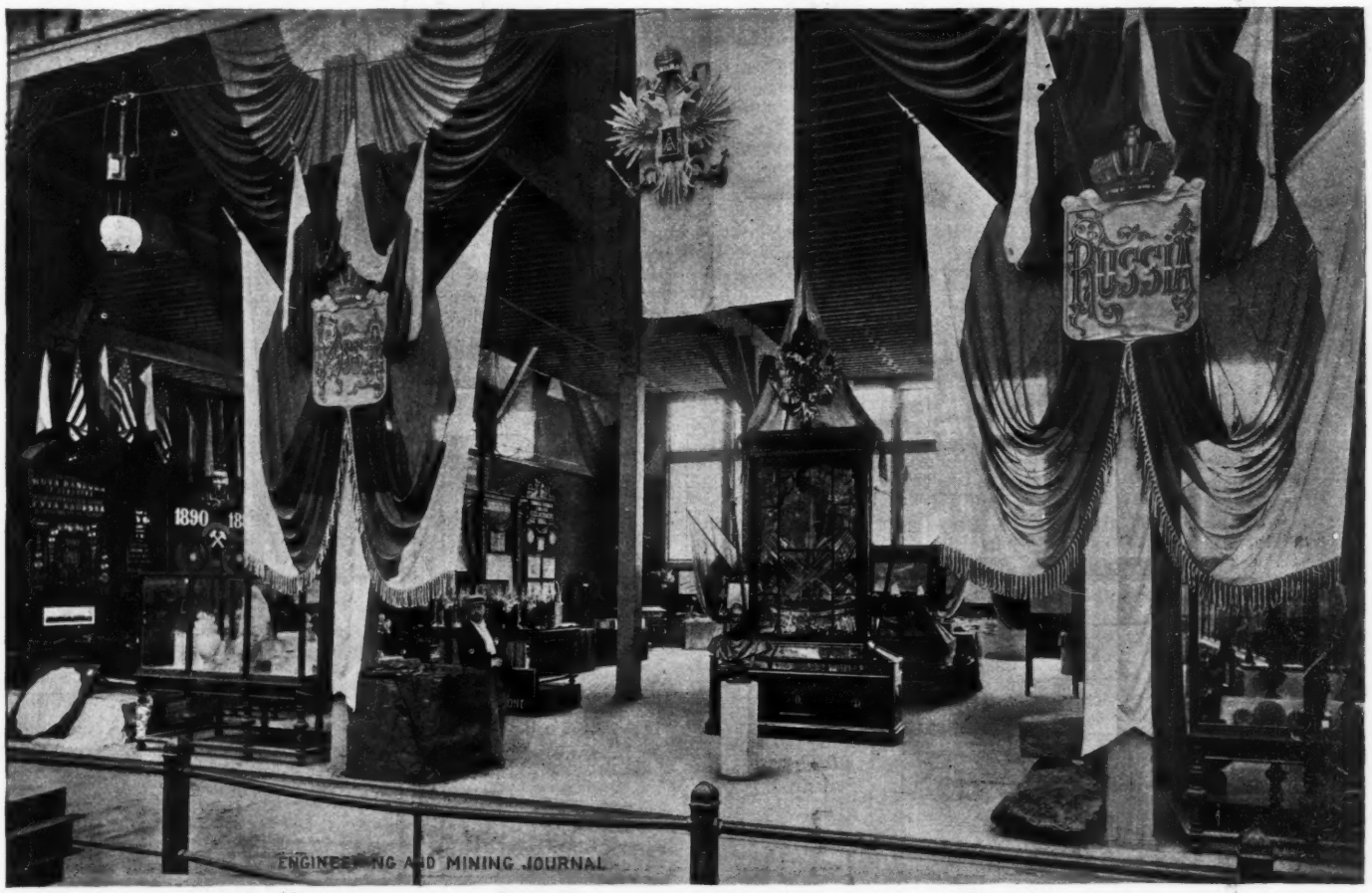
The largest and finest display is that made by the iron industry, which includes a number of exhibits. The Blagodat iron mine in the Oural district and the five iron works near it have magnetic iron ore, pig-iron, castings, bar and fine sheet iron, and these are accompanied by an album of drawings and photographs and a model of the Blagodat Mountain. The Votkinski iron works in the Oural have a large model of the works, around which are specimens of iron, malleable iron, steel, very fine steel sheets, agricultural implements, and a model of a river steamer built at the works. A number of drawings are in frames around the central case. The Abamelek-Zarazewa and Balashoff works in the Southern Oural both show iron ores, pig-iron, bars, sheets and steel, while the Shamoff works have pig-iron and castings made directly from the blast furnace.

Some very fine and artistic castings are shown by the Kyshtim iron works of Rastorgueff, in the Oural. From Zlatooust, on the eastern slopes of the Oural, are fine cutlery, small arms, hunting rifles and other specimens of the work for which that town is noted. The iron exhibit is not confined to the Oural, however, for there is a variety of iron and steel from the great works of Ekaterinoslav and Kamenskoi, in South Russia, pig-iron and bog ores from Olonetz, in North Russia, iron and steel from the Huta Bankowa and the Katharine works, in Poland; the last-named establishment has in sharp contrast a large roller for a sheet mill and some very delicate work, such as a palm branch and bouquets of flowers in iron. A great variety of ores is shown by the Mining Administrations of South Russia and the Caucasus and by some mine owners.

Anthracite and bituminous coal, coke and lignite, come from the mines of the Alexevski Company, from the Mining Administration of South Russia, from the Caucasus and from the Dombrowa basin, in Poland. A single block of coal weighing one ton is from the Abamelek-Zarazewa mine, in the Oural.

Handsome samples of rocksalt come from Kulpa, in the Caucasus, and from Brantzewska, in South Russia; salt from the Black Sea is shown by Mr. Myshkowski, and salt made by evaporation from salt springs by the Abamelek-Zarazewa factory.

A large exhibit of petroleum and its products is made by the great firm of Nobel Brothers, while no less than 58 different products are shown by the Russian-American Naphtha Producing Company. The Schmidt laboratory at Riga has a variety of lubricating oils.



THE RUSSIAN MINERAL EXHIBIT AT CHICAGO.

The miscellaneous exhibits include several collections of metals and minerals—sulphur, phosphorite, etc.; some beautiful building stone from Kapievski, at Reval; Portland cement from the Moscow Share Company, the latter showing also photographs, drawings, etc., to illustrate the manufacture.

The exhibit of machinery is not large, including samples of electric welding by Mr. Slavianoff; a rock drill of new design by Mr. Woyslav, and another rock drill by Mr. Gluskev.

The Mining Department and the Geological Committee show mineralogical collections and a library of books and maps published by them. The latest edition (1892) of the geological map of Russia is worthy of special attention.

THE DE LAVAL STEAM TURBINE.

This machine, which has attracted much attention in the Exposition, is the invention of Dr. G. de Laval, of Stockholm, Sweden, and is manufactured in that city. It is in principle similar to the axial jet turbine for water, being so arranged that the steam has acquired the same pressure as the surrounding atmosphere before reaching the turbine wheel, thus converting its entire capacity for work into momentum. The steam then passes between the blades of the turbine at a constant relative velocity and in a clear jet without any disposition to further change its pressure or specific gravity. The consequence is that the movement of the steam in the turbine is according to the same laws as for water, and the blades of the turbine can therefore be constructed in the same manner as if designed for water.

An illustration of De Laval's steam turbine is shown in Fig. 1.

The nozzle is directed against the plane of the turbine at quite a small angle and tangentially against the circumference of the medium periphery of the blades. The angle of the blades is the same at the side of admission and discharge. The width of the blade is constant along the entire thickness of the turbine, as shown in the sectional view.

As has already been mentioned, the steam has expanded to the pressure of the air before reaching the blades. This expansion takes place in the nozzle, and is caused simply by making its sides diverging. As the steam passes through this channel its specific volume is increased in a greater proportion than the cross-section of the channel, and for this cause its velocity is increased, and also its momentum, till the end of the expansion at the last sectional area of the nozzle. A pressure of 75 pounds and expansion to an absolute pressure of one atmosphere give a final velocity of about 800 m. (=2,625 ft.) per second. If the expansion is continued to an absolute pressure of 0·1 atmosphere, the resulting velocity is about 1,100 m. (=4,600 ft.). The momentum being expressed by the formula $L = \frac{1}{2} mv^2$, it is evident that although the density of the steam is small, the quantity L will be considerable at the enormous velocities which are obtained.

A turbine of this kind, rated at 5 H. P., is shown in vertical and horizontal section in Figs. 2 and 3, the nozzle being shown separately in section in Fig. 4. Steam is admitted through the inlet pipe a, Fig. 1, where the governor valve is placed. Entering the turbine-box, it passes to the two nozzles through which it reaches the turbine. It then passes between the blades of the turbine wheel and through holes in a separating plate to the discharge opening at the back of the box, and thence through the exhaust pipe into the open air. To obtain the best results a very high speed is needed, the velocity of rotation being limited only by the tensile strength of material. In the 5-H. P. turbine, the velocity of the periphery is 175 m. (574 ft.) per second, and the wheel makes about 30,000 revolutions per minute. Certain difficulties attending this great speed have been met by the use of a flexible shaft, Fig. 5, which allows the turbine to adjust itself and revolve around the true center of gravity.

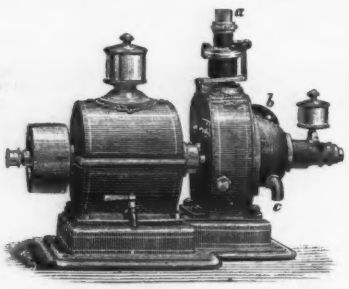


FIG 1.

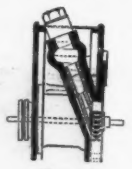


FIG. 4.

FIG. 12.

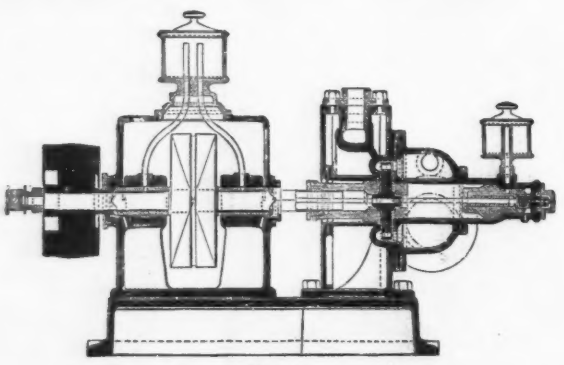


FIG. 2.

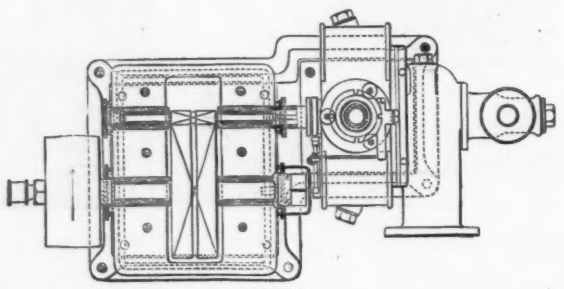


FIG. 3.

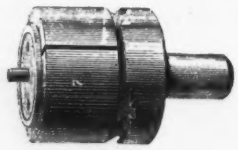


FIG. 6.

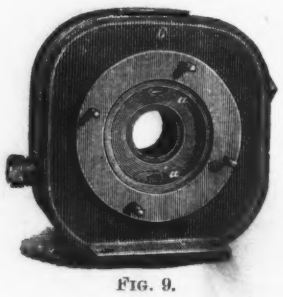


FIG. 9.

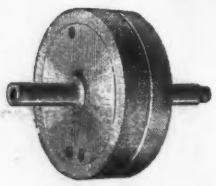


FIG. 10.

FIG. 11.

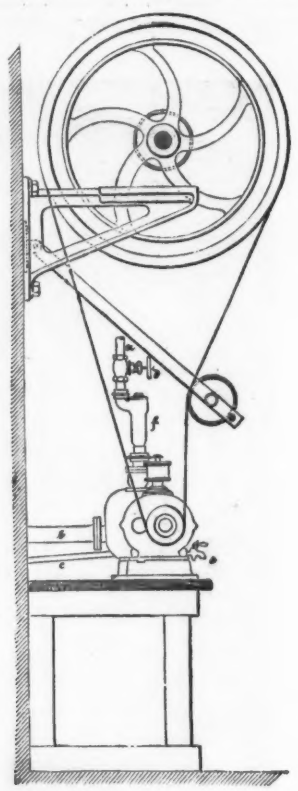


FIG. 7.

FIG. 5.

THE DE LAVAL STEAM TURBINE.

In the gearing box the speed is reduced from 30,000 to 3,000 revolutions by means of a driver on the shaft acting on a wheel with spiral teeth placed at an angle of 45°; the teeth are very fine, as shown in Fig. 10. The turbine wheel itself is shown in Fig. 11 and the nozzle in Fig. 12. Fig. 9 shows the turbine box separately. Fig. 13 shows a larger turbine, of 10 H. P., attached to a dynamo. The driving pulley is carried on the outer end of the gear-wheel shaft. The belting from the turbine to a line shaft is shown in Fig. 7. The belt, which, on account of its high speed (25 m. or 82 ft. per second), must be light and seamless, is of hemp and woven endless. The belt stretcher gives it sufficient tension to transmit the power to a flywheel on the line shaft. The purpose of the flywheel is to equalize the variations of resistance in the line shaft, thus aiding the function of the governor.

The governor is attached to the inner end of the shaft of the larger cogwheel, and is of new and original construction (Fig. 6). The frame is provided with a slightly conical pin, by means of which the governor is held in a corresponding hole in the shaft. The segment weights or wings are movable on edges thus with the least possible friction. When the governor revolves, the weights diverge, their inner ends push a pin forward, this pin in turn causing the cut-off of the valve. A spiral spring is inclosed in the governor and keeps the weights in a state of equilibrium at a speed of 3,000 revolutions. It consequently corresponds to the weight of the collar on pendulum governors. The spring is set at a pressure of about 20 kgr. (44 lbs.). At an increase of speed of 1% above 3,000 revolutions the strength of the governor is equal to 2% of the total tension of the spring, provided that the wings remain in their original position. The governor is inclosed in a metal box to protect it from dust. By means of a lever the movement of the governor pin is transmitted to the governor valve. Oil for lubrication is furnished from the two oil cups shown in Figs. 1 and 2. In the lower part of the gearing box, waste oil from the four bushings collects, as also oil from the cogwheels. It is drawn off by means of a small cock.

The practical advantages which are claimed for the steam turbine as against the oscillating engine are: Simplicity of construction, very small passive resistance, small space, small weight and a very regular speed. This last property is a consequence of the continuous admission of steam to the turbine wheel, and the equalizing effect of the rapidly revolving parts of the engine.

One of De Laval's turbine dynamos of 30 H. P. is shown in Fig. 8. Here the shaft of the turbine is geared to two cogwheels. The dynamo has two inductors, the shafts of which are directly coupled to the shafts of the two cogwheels of the turbine. Magnets and yoke are common to both inductors. The pressure on the journals is here counterbalanced electrically. This is accomplished by the winding of the inductors, this being done so that each produces one-half of the total energy passing through the main conduit (amounting to 19·8 kw.). The pressure on the cogs on each side of the driver is therefore the same, but on one side is directed up and on the other down. The shaft of the turbine is thus exposed only to torsional tension, and the pressure on the journals is reduced to a minimum, corresponding to the weight of the driver with its shaft. The wires of the two inductors can be coupled at liberty in a series of parallel. The dynamo differs in no essential manner from the well known Manchester type, with the exception of its speed of 2,000 revolutions per minute. On this account some safety arrangements have been made with regard to the strength of the inductors and collectors. The turbine

box contains eight nozzles, of which four can be opened or closed by means of independent valves, according to the power required. The more exact regulation is effected by the governor. The turbine, therefore, can be made to work at the same pressure and degree of expansion even if the effect is varied as 2 : 1. The nozzles are easily accessible for removal and exchange, if required. The journals and gearing are lubricated from the oil cups on top of the gearing box. The

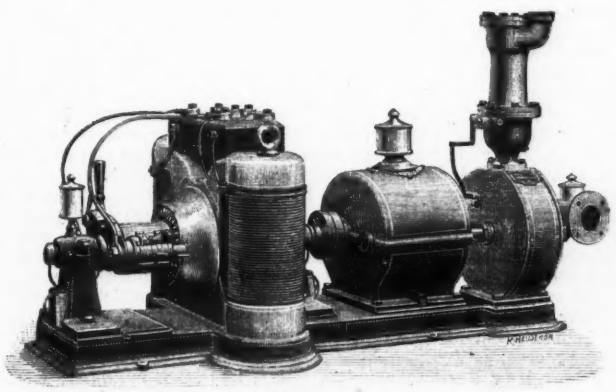


FIG. 13.

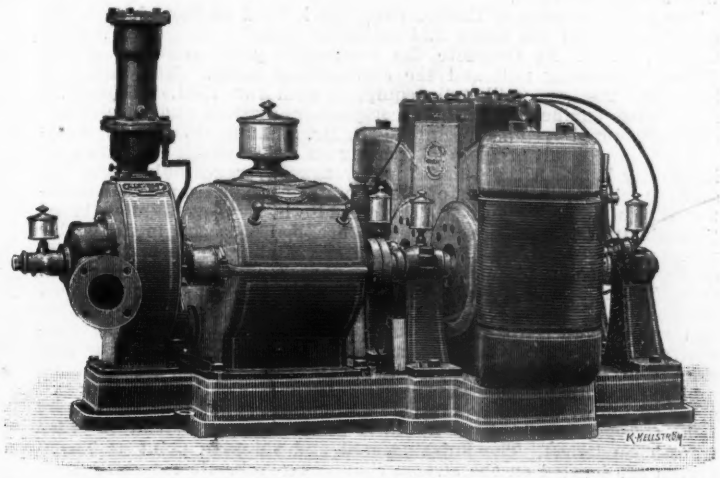


FIG. 8.

THE DE LAVAL STEAM TURBINE.

governor valve has double seats and is balanced by both seats being of equal diameters. Above the valve is a sieve of wire cloth, which prevents the steam from carrying dirt from the pipe into the governor valve. The governor itself is of the same construction as the one shown in Fig. 6, but somewhat longer. Its power is 2·2 kg. (4·85 lbs.) at an increase speed of 1% above the normal speed. This machine is intended to work with condensation. A vacuum is obtained by means of any ordinary condenser. The nozzles are strongly divergent toward the opening, and the entire turbine box made perfectly tight.

The economy of the De Laval steam-turbine is proved by numerous tests, of which one lately made by the best engineering experts with a 50-H. P. turbine dynamo showed that an effect of 63·7 H. P. was obtained with a consumption of steam of 8·95 kg. (=19·73 lbs.), and a consumption of coal of 1·21 kg. (=2·67 lbs.) per horse-power hour. Steam-turbines of any required size are built on the same model, but of larger dimensions, and have proved to work with an economy of steam equal to that of triple expansion engines of corresponding size.

The exhibit in Chicago is in charge of Mr. Reinh. Hornell, who represents the inventor in the United States. It includes a turbine which is kept constantly in operation.

THE LINK-BELT COMPANIES' EXHIBIT.

The accompanying engraving gives a general view of the exhibit made in the Transportation Building by the Link-Belt Machinery Company, of Chicago, and the Link-Belt Engineering Company, of New York and Philadelphia. The different exhibits can be readily distinguished in the cut. The first, on the left hand in the engraving, is a horizontal box conveyor, for use on platforms and in warehouses and similar places. Behind this is an example of manilla rope power transmission, the power for operating the whole exhibit being taken from a 25-H. P. dynamo by rope to a jack-shaft, and thence conveyed to the machine by a single rope. The company has designed rope power transmissions of almost every possible capacity from 1 to 1,500 H. P. The third exhibit in order, standing just to the left of the entrance, is the horizontal and inclined coal conveyor, using the Dodge chain. This apparatus is used for handling coal and ashes in many large shops, coal yards, locomotive coaling stations and similar places.

Fourth in order is the well known bucket elevator, which is employed in many places for handling coal, ores, sand and other loose

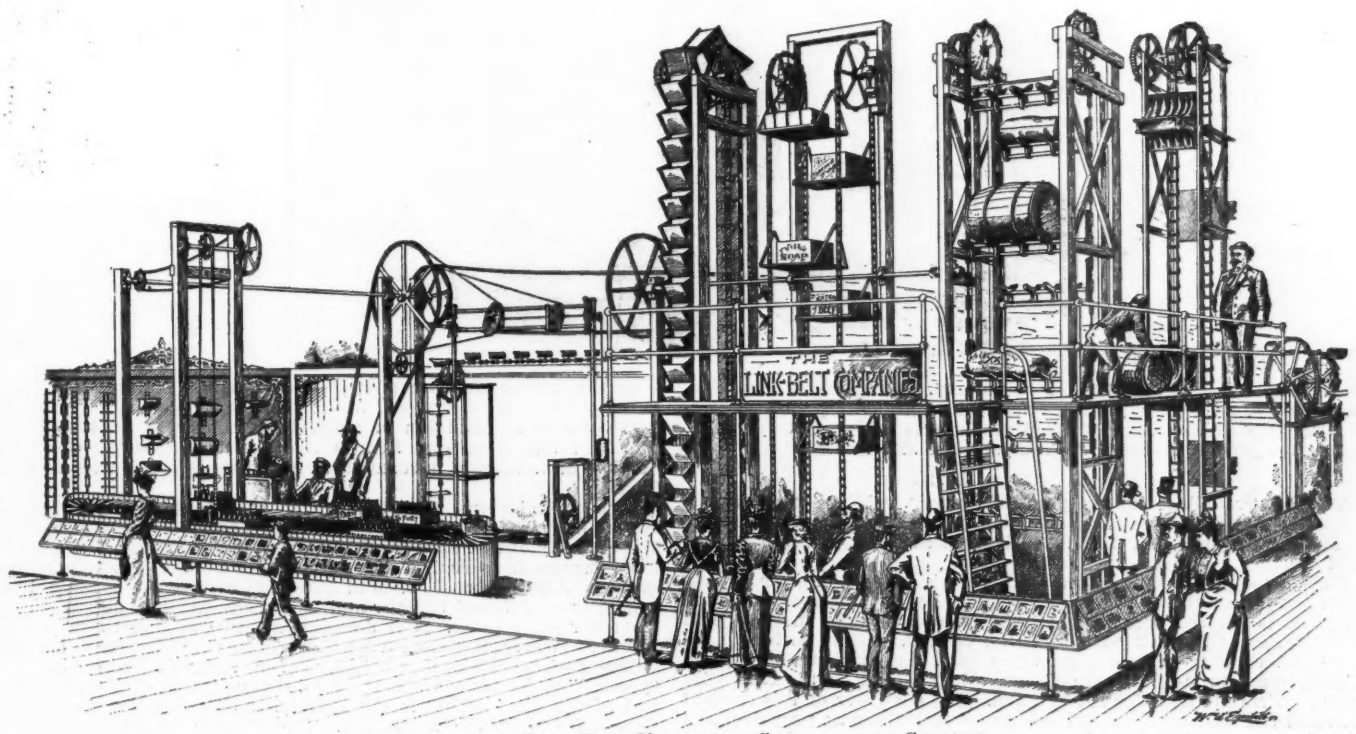


EXHIBIT OF THE LINK BELT MACHINERY COMPANIES AT CHICAGO.

material. The fifth is a package elevator for stores and factories. The sixth is a continuous freight elevator with automatic discharge, especially designed for railroads, steamers and warehouses. The seventh and last is a barrel and sack elevator, of a type which is used in many places, and has been found exceedingly useful. There is no limit to the height of these devices, one of 82 ft. lift being used in New York. The exhibit is well arranged, and shows the machinery in operation very clearly.

THE EXHIBIT OF THE JOSEPH DIXON CRUCIBLE COMPANY.

In the northeast gallery of the Mines and Mining Building there is located the graphite exhibit of the Joseph Dixon Crucible Company, of Jersey City, N. J., a general view of which is shown in the accompanying engraving. The exhibit commands special attention, for the reason that it is the largest and most varied graphite exhibit ever

made, and for the further reason that each year discovers some new use for this mineral, which is as yet only in the infancy of its usefulness. A particular feature of the exhibit is the display of various grades of American graphite. These typify the various products of the only successful mine of that description in the United States. The Joseph Dixon Crucible Company is justly very proud of the distinction attained by its grades of electrotyping and lubricating graphite, which runs close to 100% pure carbon, as well as of its other well known products.

The finishing mills of the company are located at Ticonderoga, Essex County, and the mines and stamping mills at Graphite, Warren County, N. Y. At Graphite the company's plant consists of two mines, a dressing mill and the surrounding camp. The mill is a handsome 20-stamp mill, fully equipped with two 75-H. P. boilers, a fine Corliss engine, Norwalk air compressor, dynamo and special machines invented by the superintendent, Mr. William Hooper, for working out the difficult problem of treating an ore in which the difference in gravity between the mineral and gangue averages only about 0·2, and the mineral the lighter of the two. The product must be concentrated to a very high degree. The graphite is very evenly distributed throughout a graphitic schist. The ore bodies occur in lenticular masses. The veins, two in number, are similar in formation, dip, strike, etc., being parallel and about three-eighths of a mile apart. One of them is still a surface working mine and is used in the open season. The other is underground, and is worked when the weather and snow compels the men to quit the first. It is lighted by electricity, and is reached by a tunnel which runs directly into the hillside from the stamp mill. Both workings are connected with the mill by a railroad. The whole is situated in a clearing of about 300 acres on the westerly side of Hague Mountain, about four miles from Lake George, 900 ft. above the level of the lake and about 12 miles from Ticonderoga. The finishing mill and shipping point at Ticonderoga are located on the stream connecting Lake George with Lake

Champlain. The factory for the manufacture of blacklead crucibles, lead pencils, lubricants, facings, stove polish, graphite paints, electrotyping graphite and other finished products is in Jersey City, N. J., where the general offices of the company are also located.

SOME EXPOSITION NOTES.

The Rodger Ballast Car Company, of Chicago, exhibits in the Transportation Building a center dump hopper car originally designed for ballasting purposes, but now extensively used for handling both coal and ore.

This car is peculiarly adapted to this work on account of the quickness and ease with which it may be emptied of its contents. A saving of labor is secured because the train crew can dump the cars and a special crew for that purpose is not needed. Again, owing to the ease and rapidity of unloading these cars, the cars can be kept in almost constant use, and are not standing idle, as is the case with cars requiring to be unloaded by hand. The designers of this car had in mind one that could be utilized for several different purposes, and they have succeeded in producing a car that fills the requirements so well that over 300 of them are already in use as coal cars by the Great Northern Railway Company in Montana alone.

In section 86 of the Shoe and Leather Building the Woonsocket Rubber Company, of Providence, R. I., exhibits a great variety of rubber boots and shoes. Of these the mine-boot is especially interesting to those engaged in mining. The boot is made of extra heavy rubber with the exception of the sole,which is of leather, plain or studded with nails as a protection against the sharp edges of stone and ore encountered in the workings.

In our issue of September 23d we gave the capacity of the McCully crushers as being, for No. 1, 4½ to 8½ tons, and No. 9 from 120 to 170 tons per day. Instead of per day, the crushing capacity as given is per hour. No. 1 weighs 5,500 lbs. The sizes vary up to the largest, which weighs 100,000 lbs., and crushes from 120 to 170 tons per hour for ballast, or 80 to 110 tons per hour for elevator and screens.

SMELTING WORKS IN PERU.*

By Arthur L. Pearse.

The Casapalca works were started by Messrs. Backus & Johnston, with a view to concentrate an abundance of low-grade ores found in the immediate vicinity, and which were too poor for shipment to Europe. The installation for this purpose consists of 800-lb. stamps, the pulp from which is sized by a hydraulic separator, passing on to Harty jigs; the slimes and fines are carried into conical settlers, thence on to a Frue Vanner and circular buddles, the whole of this plant being driven by a large Eiffel turbine. So successful is this experiment that a complete smelting plant has now been added, where lead bullion, silver, and copper matte are produced. The ores are treated in both reverberatory and Bruckner furnaces, in preparation for water jacket furnaces. Owing to reasons already stated, as well as to the extremely refractory nature of most of the ores in this district, an unusual amount of roasting is necessary, entailing an exceedingly heavy consumption of coal. I believe no trouble has ever been experienced in running the water jacket furnaces, as the ores have been well prepared, and good fluxes are easily obtainable. The consumption of coke, too, stands in a remarkably low ratio. Lead is too cheap to export, so the silver is extracted by cupellation. Copper matte is broken up and shipped in bags. The power for the smelting section is obtained from the river by means of Pelton wheels, and the whole establishment is lit by electricity, generated by the same. In connection with this establishment the company now controls most of the important mines in their immediate vicinity, and which are probably among the best groups in Peru. The various systems in use for the beneficiation of silver ores by raw amalgamation are: The old Patio process; ordinary chloridizing, roasting and pan amalgamation; the barrel, or Freiberg system, which has been modified; which is known as the Bolivian process—the principal feature in which is that copper bottoms are used in the tinas or amalgamation pans, dispensing with the addition of sulphate of copper as an independent chemical; and Professor Remy's so-called new system. Concentration has been adopted in some parts, and there is still a wide field left for it.

As is well known, the bulk of the ores in Peru are rebellious, and at least 90% of them require roasting previous to amalgamation. The quantity of fuel used for this (as well as for smelting) is a serious item, inasmuch as coal is dear, difficult to obtain, and of uncertain quality. Although coal exists in different parts of the country, it has generally been found cheaper and more convenient to obtain supplies from abroad, costing, as it does, an average of about $30 per ton. Where, however, it is impracticable to obtain coal, recourse is had to native fuel, consisting principally of a resinous plant known as "yereta," which grows abundantly in some parts of the Cordillera, and of "taquia," which is the excrement of the numerous herds of llamas found in the mountains. The calorific power of the latter surpasses that of coal. Moreover, both yereta and taquia afford a long flame and do not clinker, features which make them especially adapted to furnace work; but the heat generated by the yereta is not as powerful as that from taquia. I understand that petroleum is soon to play an important part in the smelting works at Casapalca, and must effect a saving at the price at which it can now be obtained. It has entirely superseded coal for locomotive use on the Oroya Railroad. Under the most trying circumstances, 37% by weight suffices to do the work formerly done by English coal, thereby effecting a saving of the difference in weight on the 4% climb, which is the grade for the major portion of this railroad crossing the Cordillera.

Iron in New South Wales.—A blast furnace is to be built at Wallerawang, in New South Wales, about 100 miles from Sydney.

*Abstract of a paper read at the Institution of Mining and Technology, Lond o n.

THE LOSS OF HEAD OF AIR-CURRENTS IN UNDERGROUND WORKINGS.*

By D. Murgue.

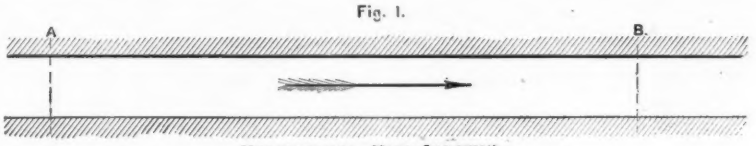
This paper, giving formulas based on experimental researches for the determination of the loss of head in air currents in underground works, and supplementing the earlier work of Devellez, Atkinson and Clark, is a most valuable contribution to the subject.

The circulation of air in underground workings is subject to a gradual and continuous reduction of its pressure, from intake to outlet, caused by the friction which it exerts on the more or less rough and uneven surfaces of the passages. The term of loss of head is used to designate this diminution of pressure in the underground air currents, and, according to custom, it is assumed to be measured by the column of water which it maintains in equilibrium. Throughout these investigations this height will be designated by the letter h. and will be expressed in millimeters because the millimeter of water has the advantage of corresponding to the pressure of 1 kilogramme per square meter; that is to say, the unit of weight per unit of surface. (A pressure of 1 kilo per square meter is equivalent to 0·205 lb. per sq. ft.)

It is easily demonstrated that the pressure lost in maintaining the loss of head increases in a direct ratio to the density of the air and to the square of the average speed of the current. On the other hand, it also appears evident that this same loss of head must be proportionate to the extent of the frictional surface of impact. If, therefore, a given numerical coefficient is introduced which will take into account the possible differences between one gangway and another, due to inequality of the contact-surfaces and the changes of direction, all the necessary elements are at hand to express this dimension geometrically.

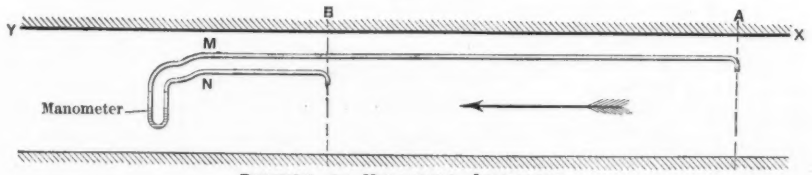
Its analytical form is easily obtained in expressing by an equation the equilibrium to be maintained by the opposing forces. For example, let the distance A to B (Fig. 1) represent a section of a horizontal gangway having a length L, in which the air-current flows in the direction of the arrow, and in which the profile is regular enough to assume the hypothesis of an average uniform section, and consequently of an average uniform speed of current. It is further assumed that the density of the air is constant, the variations of pressure, taking into account the total atmospheric pressure, being so small as to be almost insensible. At A the pressure would be H, at B a lower pressure H′, and the difference H–H′ would be the exact loss of head h sought.

Fig. 1.



HYPOTHETICAL MINE-GANGWAY

Fig. 2.



POSITION OF MEASURING APPLIANCES.

The effort exerted at A in the direction of the movement will be equal to sH, in which s represents the average cross-section of the gangway. The counter-effort, or resistance at B, will be sH′, and consequently the resulting motive-power will be the difference sH — sH′ = sh.

The resistance to be overcome is proportional to the extent of the frictional surface exposed; that is to say, to the product Lp, of the length of the gangway by its perimeter. It is likewise proportional to the density, or, to be more precise, to the weight, δ, of the cubic meter of the air in circulation, to the square of its average speed, v, and lastly to a coefficient x, whose numerical value varies according to the nature of the sides of the gangway and the irregularities of its course.

By combining the power and the resistance thus defined, the equation

$$sh = xLpv^2\delta,$$

is obtained, from which

$$h = x\,\frac{Lpv^2\delta}{s}.$$

If the variations, plus or minus, which may occur in the density of the air be neglected, it will be sufficient to assume $\delta = \delta_0$, thus reverting to the simpler formula of Mr. Devillez:

$$h = x\,\frac{Lpv^2}{s}.$$

We can assume the general expression of the loss of head as an equation of which the unknown quantity is x. In resolving it with respect to this quantity, we obtain

$$x = \frac{hs\delta_0}{Lpv^2\delta'}$$

which expression shows that if we can determine by direct observation the loss of head, the length of the passage, its average section, its average interior dimensions, the average speed of the air and its specific gravity, we shall be in position to deduce the numerical value of the coefficient x.

The object of this paper is precisely the determination of this numerical value for three well-defined types of gangways, viz.:

Gangways in solid rock, unlined; gangways lined with masonry; and gangways timbered.

The method applied to determine the loss of head can be briefly described. Let XY (Fig. 2) be the gangway, assumed to be horizontal and of approximately uniform cross-section, in which the air moves in the direction of the arrow. Starting from the same vertical plane, MN, two lines of pipe are laid along the walls, one being very long and the other quite short, so as to allow a distance of about 100 meters between their open ends, A and B. The opposite ends, M and N, are conected by rubber tubing with the two limbs of an ordinary gage, formed by a U-shaped tube half filled with water. The stagnant air filling the pipes will transmit to the gage the pressures at the open ends, A and B, more or less modified by the disturbing action due to the impact or suction of the air on the open ends of the pipes. But as this action, exerted under identical conditions at A and B, is equal for the two parts and self-compensating, the difference of water-level in the gage will be the exact measure of the difference of pressure at the points A and B; that is to say, of the loss of head due to the circulation of air over the course from A to B. The result would be the same if the gangway were inclined instead of horizontal, since the column of air in circulation and the columns filling the pipes have the same pressure and the same temperature, and hence balance one another in the gage without disturbing the indicated results.

Now if, simultaneously with the observation of the loss of head, anemometric measurements be taken, accompanied with the usual observations as to temperature, atmospheric pressure and humidity, and if care has been previously taken to measure the distance AB and the average section and average internal surface, figures can be substituted for the symbols of the formula given, and, consequently, to calculate the numerical value of the coefficient x. (For the full details of the apparatus and the experiments made, the reader is referred to the original paper, as, on account of its great length, it cannot be well abstracted.)

The general conclusions of the writer were based upon the following resume of experiments: Rock gangways—No. 1—Straight, normal section, x = 0·00092; No. 2—Straight, normal section, x = 0·00086; No. 3—Straight, large section, x = 0·00104; averages 0·00094; No. 4—Straight, normal section, x = 0·00122; averages.

Brick-lined arched gangways—No. 5—Straight, normal section, x = 0·00030; No. 6—Straight, normal section, x = 0·00036, averages 0·00033; No. 7—Continuous curve, normal section, x = 0·00062; No. 8—Sinuous, intermediate section, x = 0·00051; No. 9—Sinuous, small section, x = 0·00055.

Timbered gangways—No. 10—Straight, normal section, x = 0·00168; No. 11—Straight, normal section, x = 0·00144, averages 0·00156; No. 12—Slightly sinuous, small section, x = 0·00238.

This table shows that notwithstanding individual variations, each group is confined within pretty close lines, while the differences between groups are much greater. The three types of gangways are clearly characterized by the amount of head which they absorb, and as might have been expected, they rank in the following order: First, brick-lined arched gangways, x varies from 0·00030 to 0·00062; second, unlined rock-gangways, x varies from 0·00086 to 0·00122; third, timbered gangways, x varies from 0·00144 to 0·00238.

These figures afford instructive data on other points as follows:

Influence of Deflections from the Straight Line.—The group of arched gangways is the only one that is sufficiently complete to furnish an idea of the influence of bends in the course on the indicated loss of head. Thus: First, arched gangway, straight, x = 0·00033; second, arched gangway, only sinuous, x = 0·00051; third, arched gangway, continuous curve, x = 0·00062, which shows that the loss of head is nearly doubled by considerable curvature of the passages.

The large sections were only once experimented on, in No. 3. The value of the coefficient differed very slightly from those given for normal sections, and therefore it is included in figuring the average coefficient for general practice. The small sections were observed once on each type of gangway, and each time they gave rise to a very perceptible increase in the coefficient for the loss of head. Especially is this the case for timbered gangways, as may be judged by the following comparative table: Normal section—Arched gangways, x = 0·00033; unlined rock gangways, x = 0·00094; timbered gangways, x = 0·00156. Small section—Arched gangways, x = 0·00055; unlined rock, x = 0·00122; timbered, x = 0·00238.

These narrow passages were, however, more irregular and sinuous than the normal gangways, to which they are compared, but at the

*Paper read before the Mining Section of the International Engineering Congress at Chicago.

same time the increase appears too large and too regular not to make it necessary to introduce a new influence, which the writer calls the law of the small sections.

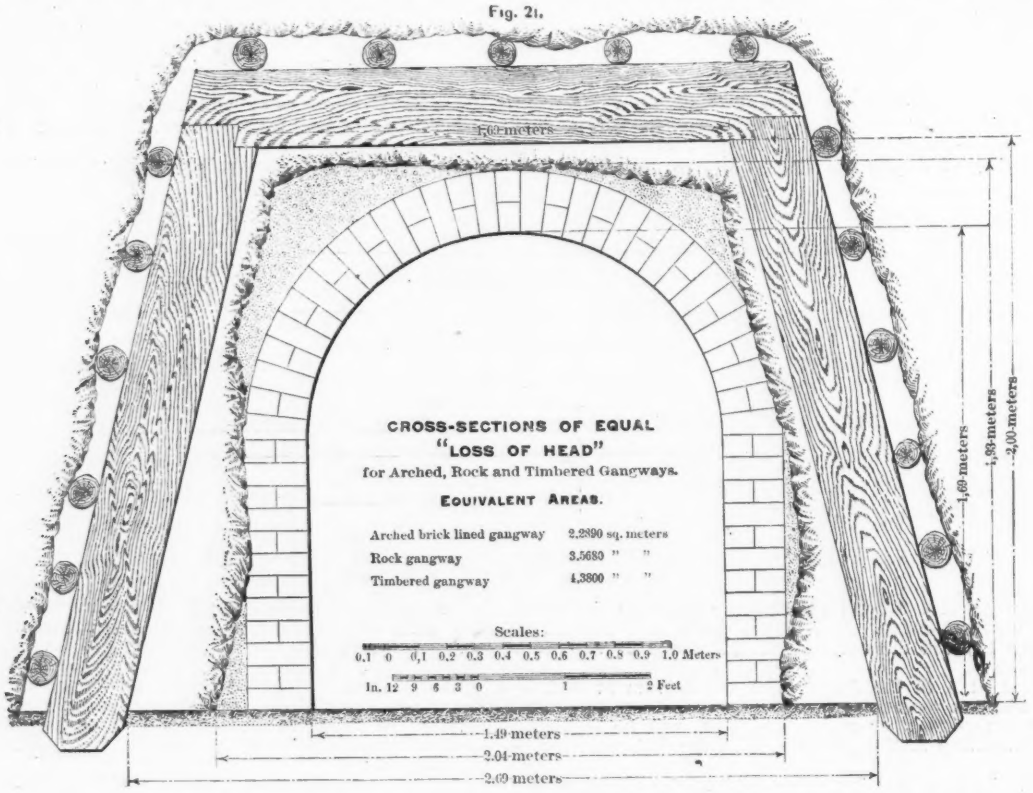
The average value for the coefficient of the loss of head proposed by Mr. Devillez for the entirety of mine-workings ($x = 0{\cdot}00180$) seems to thoroughly confirm this law. If the numerical scale of our general table be taken for this value, it is found that it was only once exceeded in the case of small-section, timbered gangways. It would therefore be too high for an average of gangways similar to those on which the observations were made. But the conditions under which Mr. Devillez and his colleagues operated covered only small sections. The average of their sections hardly exceeded 2 square meters, and were often reduced to 1 square meter. Under these conditions, the law above quoted, together with the amount of resistance opposed by the periphery of the closed passages in circuit explains very clearly the high readings observed by him. As a result of this law, it appears that mine operators have special interest in increasing the dimensions of their airways, because by so doing they diminish the loss of head, first by lessening the velocity of the air current, and, secondly, by a corresponding lowering of the coefficient x.

In order to define exactly the influence of the character of the walls, it will be only necessary to confine attention to the normal, straight gangways, which in every other respect are capable of comparison, and which were all subjected to duplicate observations in different parts of the mine. In this way the following series, which is thoroughly characteristic, is obtained: 1st. Brick-lined arched gangways, $x = 0{\cdot}00033$; 2d. Unlined rock-gangways, $x = 0{\cdot}00094$; 3d. Timbered gangways, $x = 0{\cdot}00156$.

A comparison of these figures leads to information of the highest importance, which may be expressed as follows: In the choice of lining for airways, considerations of strength and first cost should not alone be considered; close attention should likewise be given to the influence which this lining will have on the intensity of the air current that is to be circulated through it. In concluding, the writer gives a practical demonstration of this as follows: It becomes rarer day by day to be able to exploit mineral deposits by short entries only, either vertical or horizontal. Very often the difficulties of a mountainous country, the presence of quicksands, or simply the wish to utilize old shafts already sunk and fairly well situated and equipped for distant workings, necessitate driving long gangways, through which the air currents must circulate, either from the surface to the workings or vice versa. We could cite any number of such cases, but without this being necessary it will be admitted that we shall be well within the limit of reason in supposing a case where the air would have to pass through a normal, straight gangway 400 meters long and 3.60 square meters in cross-sectional area. We will assume the discharge equals 18 cubic meters per second, thus giving an average velocity of 5 meters. Under these conditions, we find that the amount of head consumed by this passage will be as follows: If brick-lined and arched, 6·6 mm.; if an ordinary rock-cut, 19·5 mm.; if timbered, 32·6 mm. Therefore, if the mine-workings themselves require a pressure of 20 mm. of water, the vacuum which the exhaust-fan will have to produce to furnish this will be: In the first case, 26·6 mm.; in the second case, 39·5 mm.; in the third case, 52·6 mm. Thus the required duty of the fan is doubled if the 400-meter gangway is timbered instead of being brick-lined.

Possibly the advantage of brick would be still more apparent if the brick walls and arches were plastered over with smooth cement, and possibly, even, the resulting gain would warrant the extra outlay. In Fig. 3 is shown a very striking graphical illustration of the advantage of using a brick lining. Taking as basis the cross-section of the rock-passage of one of the experiments, the contours of an arched and a timbered gangway have been superimposed, which, for an equal discharge, would absorb the same head. These outlines surround one another, increasing from the brick-lined section to the timbered one, so as to compensate, by loss of velocity, for the increase in the coefficient for the loss of head. As shown, the contour of the arched gangway leaves a space nearly all around inside the contour of the rock-cut, sufficient in width to introduce a brick-lining of 0·22 meter, showing that it is possible to line any normal rock gangway with brick, 0·22 meter thick, without in any way impairing its efficiency as an airway. The inside contour of the timbered section is much larger than that of the rock-gangway, and, as it is necessary to drive the passage large enough to insert the timbers, it proves that if timbering is determined upon, it will be requisite to double the size of the drift if we wish to maintain the same standard loss of head.

Fig. 21.


1.60 meters
CROSS-SECTIONS OF EQUAL
"LOSS OF HEAD"
for Arched, Rock and Timbered Gangways.
EQUIVALENT AREAS.
Arched brick lined gangway 2.2890 sq. meters
Rock gangway 3.5680 " "
Timbered gangway 4.3800 " "
Scales:
0.1 0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 Meters
In. 12 9 6 3 0 1 2 Feet
1.69 meters
1.93 meters
2.00 meters
1.49 meters
2.04 meters
2.09 meters

Petroleum in Alsace.—In a recent paper on petroleum beds near Pechelbronn, Lower Alsace, M. Daubree says: It is calculated that all the sources together produce at present 80,000 kgs. of petroleum per day, and it is probable that many jets, if bored wide enough, would be capable of yielding 50,000 kgs. per day each. Some of the sources show a remarkable rise of temperature with increasing depth, reaching 1 for 7 m. in one boring.

Coal and Asbestos in Newfoundland.—Mr. Howley, of the Newfoundland Geological Survey, has discovered extensive coal seams at Aldery Brook, which falls into Grand Lake. He and his men carried out extensive exploring operations some time ago which laid bare five seams of coal, one of which averaged "2 ft. of good solid coal." Upon the continuation of the survey, it was found that the seams improved in quality and assumed larger dimensions. No. 6 had widened out to 8 ft., with about 2 ft. of coal of good quality. Nos. 7, 8 and 9 were not quite so large as before, but Nos. 10, 11 and 12 had run together, forming one wide seam, with alternations of coal and clay, measuring 22 ft. across. The report made states that the actual number of separate and distinct coal seams is 15. The lowest seam probably reaches 500 ft. below the surface, at a point where the strata begin to turn upward. Much of the coal is above the surface of the river's level. The Government has reserved this coalfield for the present, so as to prevent it from being laid hold of by speculators and locked up.

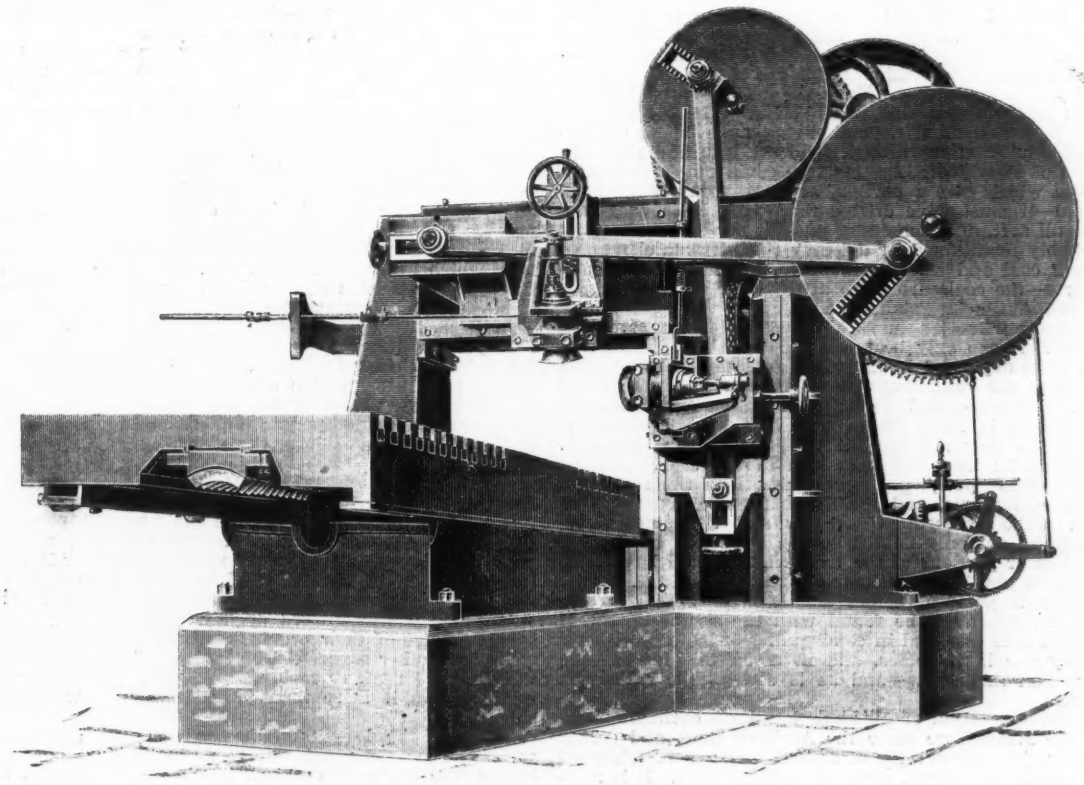
In regard to asbestos mining, the same report states that the first active operations were undertaken by a United States syndicate, which leased a mining property in the vicinity of St. George's Lake, situated between St. George's Bay and Bay of Islands. Mr. Howley says of this locality that he found one vein 9 in. wide, consisting of several rudely parallel layers of fiber divided by serpentine. The fiber varied in length from ½ in. to 2 in., and was of fairly good quality. The indications are fairly good, the quality of the fiber excellent, and should the serpentine deposit in which the mineral occurs be found to occupy any considerable area, there is a reasonable prospect that asbestos will accompany it.

The "Newfoundland Telegram" announces that Professor Jones, representing the London Asbestos Company, and Mr. Willis, vice-president of the Halifax Asbestos Company, have arrived at St. John's, with the intention of spending the season in working and prospecting the asbestos areas at Port-au-Port.

A DOUBLE-ACTION STONE DRESSING MACHINE.*

The accompanying illustration shows a stone-dressing machine designed and built by the firm of Brunton & Trier, of London, England. This machine is designed to act on two edges of a block simultaneously, producing at their intersection perfect arrisses. The cutting tools are the well known discs invented by the manufacturers. Two of them are employed, one having a horizontal and the other a vertical motion, the direction of cut being in all cases at right angles to the length of the stone. Each tool is mounted on a spindle in a holder, so arranged that it has an automatic motion at each end of its stroke, whereby the tool is put in position for cutting both in going and returning. The cuts are alternately roughing and finishing, the tool in traveling in one direction taking off the bulk of the stone that has to be removed, and in returning skimming off the remainder. These operations take place at two different levels, and in lines of which one is in advance of the other. The feed varies from 1 in. per minute for hard granite to 4 in. on hard sandstone, and takes place at the end of the cut. The depth of cut may be anything up to 1 in. The tool rests are carried backward and forward on the slides by connecting rods worked from crank discs, which are themselves driven by spur gearing from the first motion shaft. The stroke of the crank pins can be varied to suit the size of block under treatment, and the two crank discs are so arranged relatively to each other that the tool-boxes never foul each other. The position of the tool-boxes can also be adjusted by screws, both horizontally and vertically.

The power required to drive the machine varies, according to the stone, from 3 to 6 H. P. It will cut the hardest stones, such as granite, syenite or hard limestones, as well as the softer kinds. The machines are made in three sizes to dress blocks of the following dimensions: No. 1, blocks 12 in. by 18 in. by 9 ft.; No. 2, blocks 24 in. by 36 in. by 9 ft.; No. 3, blocks 36 in. by 48 in. by 12 ft. By having two tables the time lost in changing blocks can be reduced to a very small amount. Three driving worms are provided to gear into the worm rack shown, and by their aid the table can be run completely off the guides, and another table run on. It is claimed that this is the only machine producing surfaces superior to, and closely resembling the best hand tooling, with straight tool marks at right angles to the length of the stone, as required by architects. The finished stones are unplucked and unstunned and can be rubbed with great rapidity.



THE BRUNTON & TRIER DOUBLE-ACTION STONE-DRESSING MACHINE.

Cast Steel Projectiles.—In a recent test of cast-steel projectiles made by I. G. Johnson & Co. at the Spuyten Duyvil Iron Works, New York, which was made at the Indian Head proving ground, three shots were used, two of which were solid and the third was hollow. A solid shot and the hollow shot were fired with a velocity of 1,400 foot-seconds and an energy of 6,850 foot-tons. The hollow shell smashed itself against the face of the plate after penetrating 8 in. The shell welded on the surface of the target. The first solid shot fired at the same velocity penetrated 13·6 in., the head of the projectile remaining in the aperture and the base of the shell being shattered. The second solid shot was fired at a velocity of 1,890 foot-seconds, and an energy of 12,495 foot-tons. The head of the shell penetrated 19 in., the base breaking off and breaking up, while the head remained imbedded in the plate. The test was made unusually severe by making the curved 17-in. plate of the "Indiana" the target.

* Abstracted from article in London "Engineering."

THE CARBONIFEROUS AGE AND THE ORIGIN OF COAL.

Written for the Engineering and Mining Journal, by William H. Page.

Few persons engaged in the mining or consumption of coal, from the technically educated engineer to the most ignorant miner, have failed to speculate upon its origin or formation; and few geologists or scientists have failed to accept a theory which is full of complications, presupposing conditions which it would seem could never have existed within the evidences of man, and in some respects contrary to the laws of the solar system as well as those of life in the animal and vegetable kingdoms.

This reference is to the formation, rather than to origin, in regard to which there can be no reasonable doubt.

Briefly stated, the accepted theory of the carboniferous period is based upon a hot, moist, carbonic atmosphere, in which the coal flora flourished abnormally, becoming matted and deposited to enormous depths, in perfectly still waters, presumably inland lakes. After the necessary vegetable matter for a coal measure had been thus accumulated, through a gradual subsidence the ocean swept over it, tore down continents, and deposited their sands and clays in even layers, varying in thickness from a few inches to hundreds of feet, during which the winds blew, waves rolled and currents were marked. Yet this layer of light vegetable matter was undisturbed, while the heavier sands deposited above were twisted into warped surfaces, quartz pebbles, and bowlders were rolled and rounded by the violent action. After such a stormy period the surface was again raised above the ocean, another vast period of perfect stillness and swampy conditions prevailed, with a uniform depth of fresh or brackish waters, just sufficient to permit rooting in the underlying clays of such trees as the Lepidodendroids, Sigillaria, Calamites, etc., over great continuous areas, which nothing apparently again rippled until another deposit of pure vegetation, perhaps 100 ft. or more in depth, had been formed, necessary for a measure of 10 ft. of coal, when the same thing was repeated a hundred times—as must have been the case in the Nova Scotia and Appalachian fields, where there are from 80 to 100 separate coal seams, and an aggregate thickness of carboniferous strata of more than 14,000 ft. in the former and about 9,000 ft. in the latter.

Such conditions seem unreasonable when we consider that on the North American Continent alone this formation covers more than 200,000 square miles, and it is certain that large additional areas have been denuded.

Confining the subject to the Appalachian field, about 60,000 square miles remain with remarkable conformity; and this is not the largest field, as the central deposits cover about 80,000 square miles. The State of West Virginia embraces 16,000 miles, in which there is scarcely a break or fault, and through which wonderful uniformity has been established, its principal measures recognized and classified with those of Pennsylvania, Ohio, Kentucky, Tennessee and Alabama. This identification holds good, not only with the coals, but in the siliceous and calcareous beds as well.

As improbable as all this may appear, to one who is familiar with the strata in detail it is not the most difficult part of the theory to maintain.

From the nature of the vegetation, as well as animal life, such as the Lithostratian and other corals, spiders, Brachiopods, etc., found in the Arctic coals, and inseparable from this period, it is admitted that the waters there could have been at no time of the year below

66° F., and that the present Arctic climate must have been torrid; while the temperature could not have been less near the equator, nor yet too great for life. Assume the frigid zone to have been torrid, the same relative distribution of the sun's rays would have destroyed all life at the equator. It therefore becomes necessary to change the axis of the earth, or its present relation in the solar system, which might be reconciled with the imagination, but not with astronomical or geological facts, as observed at present.

But it is certain that, from the Archean period, when the rocks were fluid, order and life began, and continued through the long periods of the Cambrian, Silurian and Devonian, before the Carboniferous was reached; and if we admit tropical heat near the poles during the latter, we cannot reconcile life with the preceding age of invertebrates without conflict with the established order of evolution. That a thin layer of sandstone, between two coal measures—or even as a band between benches of the same seam—should show unmistakable evidence of violent winds and currents is, to say the least, inconsistent with the requisite conditions for such uniform deposit of vegetation, and must refute the assumption that the waters were quiet; while the presence of both land and marine life, indiscriminately mixed in all the strata, renders the idea of alternate sea and fresh waters untenable. Had such been true, these orders would have been as distinctly defined as is the stratification of the coals, clays and sands, which are never indiscriminately mixed, though thin envelopes of pure coal are frequently found in the thickest ledges of shale and sandstone, surrounding a fossil or petrifaction imprisoned in their sediments; and it is remarkable that this thin envelope corresponds with the bark of the specimen, which can be accounted for only upon the assumption that the bark is the last portion of wood fibre to decompose or petrify. I have seen Lepidodendroids 4 ft. in diameter on the flattened axis, and more than 100 in length, with little taper, in the roof of coal measures, completely enveloped by coal not exceeding ¼-in. in thickness, and it is a very common occurrence to find Calamites similarly imbedded in massive sandstone ledges where there has been no lamination. Even the nutlike fruit (Trigonocarpus), with coal replacing its rind, is frequent. I have also seen perfect sandstone petrifactions 2 ft. in diameter, unflattened, extending in a nearly upright position through the coal, into and probably through many feet of slaty roof. As this tree could not have grown in that position—in which case a portion, at least, would have been converted into coal—it must have drifted there before, or while the coal deposit was still soft, and remaining upright in water, where its position was probably maintained by a heavy root, it was enveloped by deposits of both coal and slate, without further movement. If—as Mr. Dana asserts—the coals are more attributable to these larger genera than to peat moss or smaller varieties of vegetation, how came this sandstone petrifaction in such relationship with the coal and overlying slate? It can only be reconciled upon the assumption that coal was no more deposited in the shape of trees and unaltered vegetation than were the sandstones and slates in building blocks and heavy ledges. These so-called remnants of an upright forest are probably more common in Nova Scotia than anywhere else, and it has been asserted that they are there still rooted in the sub-clays. This may or may not be true, but it is certain that the Stigmaria, known among miners as "pots," are more frequent in the roof than in the floor of all coal seams, and the Stigmaria are generally accepted as the root of the Sigillaria. Grant this, and it becomes necessary for the root to be not only floated on top by water, but higher than the stem or lighter portions of the tree, which would have been contrary to the law of gravity, even in the Carboniferous age.

It is not necessary to go into further details here of this theory, where conflict after conflict can be found with the simple operation of nature's laws; but it is essential in condemning one theory to offer a more satisfactory one in its place, and in doing this let us take these laws as we find them now—and as is always the safest—in their simplest forms.

In the first place, vegetation of all kinds has been extracting carbonic acid from the atmosphere since the Archean time, and giving off oxygen in return, just the reverse of animal respiration, while all oxidation, which consumes oxygen, gives off carbonic acid. It is reasonable to suppose that in the earlier geological periods the air contained more carbonic acid than at present, as the heat and consequent oxidation must have been greater. But nature has evidently kept a balance between these orders of life from their beginning.

An excess of carbonic acid would necessarily stimulate vegetation, and there is evidence of such conditions in the Devonian and Silurian periods, as well as in the Carboniferous; but during the whole of this time animal life existed cotemporaneously, and the balance must have been constantly maintained, or changed by some fixed progression, which must be in effect to-day. Not an atom of carbon converted into vegetable fiber has been lost, consequently the accumulation must be stored in the rocks—principally coal and limestone. And if we look upon the ocean as the great storeroom for the one, an analogy will certainly be found for the other. Every leaf which falls and every blade of grass contains an appreciable quantity of fixed carbon; and while the waters have been constantly reducing the high places to its great level, and building up the low, until whole continents have been transplanted, what has become of the incalculable solid carbon floated upon the bosom of the deep? If it tears asunder each grain of granite rock before it is again laid upon the new structure, is it likely to spare the more fragile wood fibre?

Consider for a moment the millions of tons of carbon conveyed to the Gulf Stream annually by the Mississippi; then add to this all the other drainage of the earth, and ocean vegetation; mix this in a decomposed condition with the sands, clays or decomposed rocks, in a vast system of ocean currents or agitators, and mark the natural result of the sedimentary deposit therefrom through continuous ages. Or compare with what may be obtained in the very simple gravity machine known as the jigger. Just as the chaff is separated from the wheat, so would the ocean currents deposit all solids in suspension by regular retrogression, the lightest furtherest from agitation, the next in specific gravity following, and so on, as is found in the order of coals, clays and sands in the Carboniferous. Partially decomposed or petrified woods would drift with the material of like buoyancy, and this would account for the fossils and petrifactions in the sands and clays, rather than in the coals. The atomic weights of carbon, aluminum and silicon being 12, 27·4 and 28 respectively, it might be inferred that the line of demarcation would be more distinct between the coals and slates than between the slates and sandstones. In general this is true, and with the exception of a few well defined conglomerate sandstones and carbonaceous shales, the sandstones and shales frequently alternate, the one having an argillaceous and the other a siliceous tendency. The erect trees and local variations could all be satisfactorily explained by ordinary wave disturbances from volcanic or other local causes, and ripple marks would be the natural result of such a process. Animals, both land and marine, would be caught in the same way as in other formations where deep water sedimentations is admitted.

If the ocean has deposited the vegetation after decomposition or partial metamorphosis, it is no longer necessary to account for the bobbing up and down of thousands of square miles of, first, water and then land, under distinct meteorological conditions; but a single gradual subsidence and final elevation will account for the entire formation. Nor do we have to regerminate life a hundred separate times after complete submergence and destruction, nor convert the salt into fresh waters.

What is of still greater force, it avoids the necessity of changing the axis of the earth, or its relationship to the solar system, as it is only necesary to assume a tropical continent above water when temperate North America was submerged, with large rivers or currents flowing northward, and which was submerged in turn when America was elevated. Under the same general and natural laws carbonaceous deposits may have been going on since organic matter was created, and must be in progress to-day.

A careful investigation of the coal floor, roof and partings in the Appalachian basin will inevitably refute the old fresh water theory, while the jigger assumption will reconcile all the evidence. The uniform fracture and laminations of all bituminous coals is positive proof of sedimentary deposit after the vegetation had undergone some transformation at least. In every seam of such coal there will always be found planes of cleavage—or free partings of the miner—every few inches, which are uniformly parallel to the floor and to each other, while the vertical planes of cleavage are in two directions at nearly or perfect right angles, known as the "faces" and "butts" of the coal, these undoubtedly bearing some relationship to the direction from which the deposit was made. These planes are very distinct in the splint or block varieties, but they are so persistent and uniform in all, and demonstrate the fact that there were laminations in the organic matter before distillation took place, which could not have been possible in a tangled mass of trees and unaltered vegetable matter, before or after its burial. The vertical planes might be attributable in part to the action of gases later in the process; but the horizontal partings can only be due to sedimentation, as thin lines of slate, pyrites, bitumen or graphitic carbon, often several inches thick and sometimes invisible to the naked eye, are found to be the cause of these partings. Such foreign matter as the slates and pyrites are probably due to infiltration, but the fact that they are found in these free partings is evidence that the parting existed before the infiltration could be arrested there; and their perfect parallelism to the assumed horizon can be traced to the action of water alone. If the sulphur and iron existed in the vegetable matter in sufficient quantity to account for the pyrites, as claimed by some authorities, the oxidation of the ferrous sulphate by organic matter did not remain in distribution, but was filtered or jiggered into these crevices, and is as good evidence of their previous existence as if the bisulphide of iron came from other sources. The fact that it is found in scales between the coal and roof, or molded, as it were, in nearly all sedimentary rocks, makes it more than probable that it was derived from outside.

That all the deposits of the Carboniferous age were made in deep waters seems clear and admissible of proof; but whether the distribution was made by currents like the Gulf Stream, in midocean, or in regular progression from the mouths of great rivers, is a question for investigation. There are arguments in favor of each, but the difference is one of degree rather than final results. The great thickness of coraline limestone in the sub-Carboniferous would indicate moderate depths at the beginning and a continuous subsidence, as coraline limestone is found several thousand feet higher, in the coal measures proper, in perfect conformity. Both Rogers and Dana have put the "Mill Stone Grit" or "Conglomerate Series" in the sub-carboniferous, or false coal measures, but it undoubtedly belongs to the true coals, as demonstrated in the Pocahontas Flat Top and New River sections. The false coals here are found at the top of the Devonian, in the "Vespertine," upon which the sub-carboniferous limestones rest. As a rule, this coal is graphitic, but it has been worked as anthracite east of the Alleghany axis in Virginia. West of this axis, in Greenbrier County, W. Va., it is graphitic, and analyzes about 5% volatile matter and 85% fixed carbon. This formation differs from the true coals, however, in that the slates are not stratified in partings, but are intimately mixed through the fractures of the coal, though the roof and floor are horizontal and regular. In respect to the slates, it resembles the Mesozoic coals near Richmond, Va., and the cause is probably the same, disturbance and infiltration, as it is near the axis of maximum pressure that elevated the Appalachian. Throughout West Virginia the lowest coals seem to contain the least volatile matters, which looks as if the pressure had reduced the hydro-carbons in a marked proportion relative to position rather than to present covering, unless it can be shown that the jigger was capable of such delicate separation in original matter.

Stratified like the coals, both high and low in the order, are vast deposits of shale, so rich in carbon that some can be lighted with a match, and a few hundred feet below the Mahoning sandstone is a ferro-siliceous deposit of about 4 ft., known as the "Black Flint Ledge," from which the Indians made arrows and spear heads, and

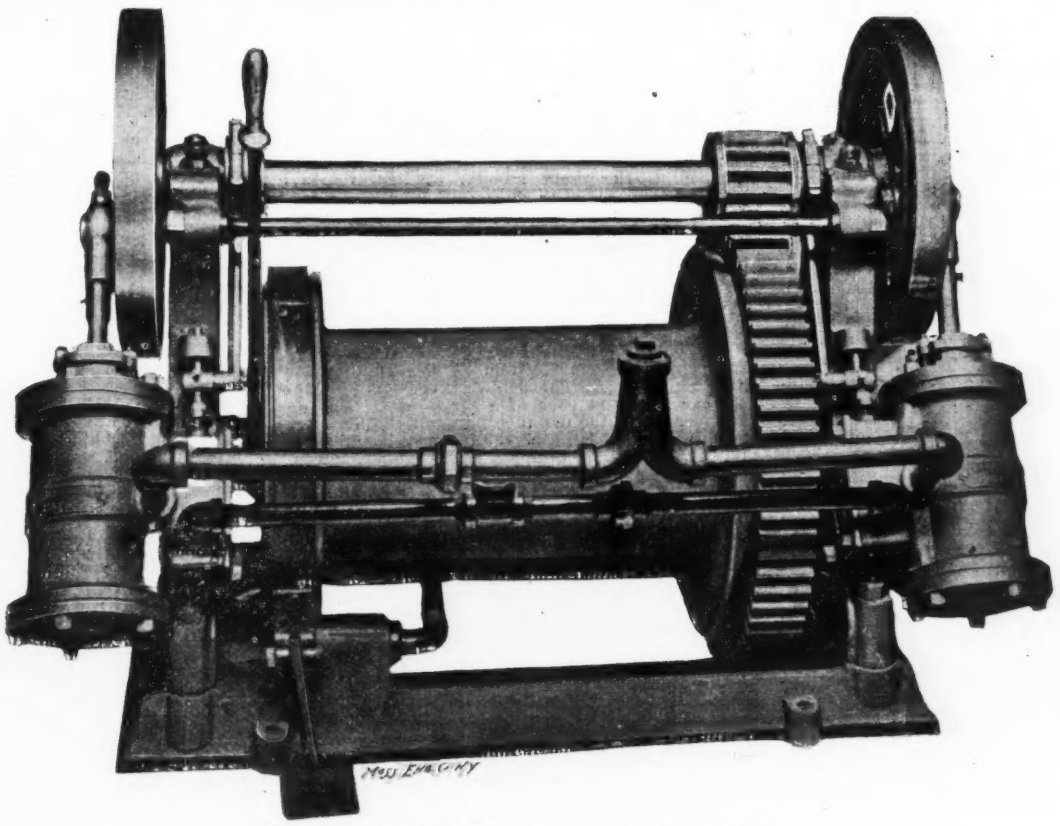
in such perfect conformity that it has been universally accepted as a datum line for the identification of the different coals. Equally as persistent and uniform, but on a lower horizon, is a ledge of black marble, imbedded in a cannel shale from which oil was formerly distilled. This marble has a characteristic fluted structure, and is filled with Brachiopods, Spirifer and other sea fossils. What arrangement of fresh and salt water alternations can satisfactorily explain such a formation? And if the carbons in this shale were due to vegetable matter in salt water, why not the coals as well, from which it differs only in proportions?

When theory puts forth a chemical or mechanical action of nature, which cannot be duplicated upon a smaller scale in the laboratory, it is well to accept the conclusions cautiously. But with carbon, sand, alumina and a jigger we can make the requisites for a coal section upon a small scale.

In considering the subject from any point, however, one fact stands pre-eminent: The formation of coal was a fixed purpose in the design of Nature's laws, and was not applied to man's use by accident. Without this vast store of energy we could not even maintain our position on earth, much less attain our present and prospective development.

BACON'S 'SPECIAL" HOISTING ENGINE.

The engine shown in the accompanying illustration, and built by Copeland & Bacon, of New York, was designed especially for light hoisting, in mines for underground use, as in winze sinking, etc., and



COPELAND & BACON'S UNDERGROUND HOISTING ENGINE.

has proved by the number in daily use to be an efficient, compact and reliable engine for such work. The Huanchaca mine in South America has 36 of these engines. The engines are made in two different sizes, with double 5-in. cylinders and friction drum 12 x 21 in. and brake, the space occupied 3½ x 2 ft., and with double 6-in. cylinders and friction drum 14 x 24 in. and brake, the space occupied 4½ x 3 ft. They can be run by steam or compressed air (generally the latter is used), and when lowering, the drum runs loose on the shaft independent of gearing, and controlled by a wood-lined brake. Each engine is furnished with quick-acting throttle-valve and lubricator, and is thoroughly tested before leaving the works. The flanges are deep, enabling the drum to be lagged with wood if thought desirable to increase its diameter.

The engines are made of the best materials, and all parts are carefully designed and proportioned with reference to the work. The convenience and use of such an engine in mining work will be readily seen.

A New Device to Avoid Liability.—Our London correspondent notes the formation of a limited liability company under British law to own and work the new steam pleasure yacht "Valiant," built for Mr. W. K. Vanderbilt. The capital of the company is £100,000 in £1 shares, and Mr. Vanderbilt holds all the shares with the exception of seven, which are held by the other shareholders necessary in the formation of a limited liability company. Mr. Vanderbilt is also governing director of the company. Among the shareholders are the Lairds, of Birkenhead, who built the yacht, Mr. W. S. Hoyt and Mr. Ogden Mills, of New York. The idea of forming this company is to remove the liability in case of collision with or other damage to another vessel from Mr. Vanderbilt and to place it with the company, whose only assets are the yacht and its fittings.

RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Supreme Court of Oregon.

Injunction Against Trespass and Waste in Mining Claims.

An injunction will lie to restrain trespass on and waste of a quartz ledge in a mining claim, the remedy at law being inadequate. Where plaintiffs are in possession of a mining claim as locators, under the Revised Statutes, it is not necessary that they maintain an action at law to determine their possessory title, bringing suit to restrain threatened waste and trespass.—Allen vs. Dunlap. 33 Pac. Rep. 675.

Notice of Location—Mining Claim.

A notice of location of a mining claim alleging the location of 1,500 linear feet, commencing at the notice, and running 750 ft. in a southwesterly direction and 750 ft. in a northeasterly direction, with 300 ft. on each side, is not open to the construction of being 750 ft. in one direction, and then back to the starting point.—Allen vs. Dunlap. 33 Pac. Rep. 675.

PATENTS PUBLISHED IN GREAT BRITAIN.

The following is a list of patents published by the British Patent Office on subjects connected with mining and metallurgy:

WEEK ENDING SEPTEMBER 16TH, 1893.

13,555 of 1892. Manufacture of Alloys and the Purification of Metals and Alloys. Dr. J. B. Torres, Paris.
15,880 of 1892. Calcining Furnaces. A. Dauber, Bochum, Germany.
17,206 of 1892. Improvements in the Manufacture of Steel. J. Colley, Bilston, and T. Twynam, London.
17,911 of 1892. "Carborundum." P. M. Justice, London. (E. G. Acheson, Monongahela City, Pa.).
12,624 of 1893. Recovering Float Gold. A. F. Seccombe, Gunnislake, Cornwall.
13,475 of 1893. Coal-Cutting Machine. A. Keil, McKeesport, and A. R. Westerdahl, Chicago, U. S. A.

PATENTS GRANTED BY THE UNITED STATES PATENT OFFICE.

The following is a list of the patents relating to mining, metallurgy and kindred subjects issued by the United States Patent Office:

TUESDAY, SEPTEMBER 12TH, 1893.

504,706. Method of Extracting Metals from Ores. Hugh Calhoun, Hot Springs, and Aaron M. Beam, Bear. Assignors, by direct and mesne assignments, to the United States Desulphurizing, Dry Chloridizing and Amalgamating Company, Hot Springs, Ark.
504,720. Flexible Shafting. George W. Gillette and Mott G. Gillette, New York, N. Y.
504,723. Hydrocarbon Engine. Alexander Gray, London, England.
504,725. Go-devil. Henry Hall, Hill City, S. Dak., Assignor of two-thirds to Henry Herbert Hall, same place, and John L. Buckingham, Hermosa, S. Dak.
504,759. Pipe Joint and Coupler. James A. Murray, Minneapolis, Minn.; Kate F. Murray, Administratrix of said James A. Murray, deceased.
504,750. Hydraulic Dredge. Arthur W. Robinson, Bucyrus, O.
501,761. Grinding Mill. John Thompson, Bucyrus, O., Assignor to the Frey-Sheckler Company, same place.
504,774. Electrolytic Cell. Thomas Craney, Bay City, Mich.
504,841. Process of Treating Malleable Iron. John H. Ladd. London, England.
504,859. Amalgamating Pan. Martin P. Boss, San Francisco, Cal.
504,903. Machine for Upsetting Metal. Frederick W. Bruch, Cleveland, O.
504,922. Gravity Pump. William A. Hartt, Tucson, Ariz.
504,923. Concentrator. David W. Humphries, De Lamar, Idaho.
504,931. Ore Separator and Concentrator. Ira F. Monell, Sugar Loaf, Colo.
504,944. Method of and Machinery for Hoisting. Edwin Reynolds, Milwaukee, Wis.
504,998. Reversible Draught Brick Kiln. Alpheus L. Plasters, William F. Rankin, and James M. Wolfe, Tarkio, Mo. Said Rankin and Wolfe assignors to said Plasters.
505,028. Apparatus for Using Gases Under High Pressure for Power. George H. Chappell, New York, N. Y., Assignor to the New Power Company, same place.
505,036. Tubular Boiler. Ellis F. Edgar, Woodbridge, N. J.
505,065, 505,066, 505,067, 505,068. Hoisting Machinery. Alton J. Shaw, Muskegon, Mich., Assignor to the Shaw Electric Crane Company, same place.

PERSONALS.

Mr. Charles H. Terry, of Chicago, was chosen a member of the British Iron and Steel Institute at the recent meeting.

Mr. Robert M. Stevenson, formerly superintendent of the Britton Iron and Steel Company, Cleveland, O., is now connected with the Midland Steel Company, Muncie, Ind.

Messrs. James Brothers, mining and metallurgical engineers, of Mansion House Chambers, London, have removed their offices to 14 Sherborne Lane, London, E. C.

Lieutenant-Colonel Diener, late of the Engineer Corps of the Prussian army, and recently attached to the Krupp Works, at Essen, has been appointed a member of the direction of the Grusonwerk, at Magdelburg-Buchau, Germany.

Mr. M. P. Gosset, of London, England, is now in New York, and leaves shortly for the West, on a professional trip. A report recently put in circulation that he was in Mexico had no foundation, as he has been in London for some time past.

Mr. Reiji Kanda, chief mining engineer of the Sado district, in Japan, who has been visiting the Chicago Exposition, passed through New York this week on his way to Germany, where he will pass some time before returning to Japan. His address for the present will be at the Japanese Legation in Berlin.

Mr. L. O. Smith, formerly a member of the Swedish Senate, but at present a resident of France, has been spending some time in this country studying its financial conditions. Mr. Smith has for some years devoted his time to the study of finance and is much interested in the various problems which now confront us and in their probable solution.

Mr. Paul Schneider, president of the Douchy Coal Mining Company, in the Department du Nord, and vice-president of the company operating the coal mines of Courrieres in the Pas-du-Calais, France, was recently in New York on his return from the Chicago Exposition. Mr. Schneider proposes to visit Washington and other points before returning home, and is making observation on the coal trade of this country.

Mr. Robert E. Preston has been appointed director of the mint, to succed Mr. Edward O. Leech, who recently resigned. Mr. Preston's appointment is in the direct line of promotion for good service. He entered the government service in 1856 as a clerk in the first auditor's office in the Treasury. When the Mint Bureau was organized in 1873 he was appointed examiner, and for much of the time since he has had charge of the statistical work. Since Mr. Leech resigned, Mr. Preston has acted as director.

OBITUARY.

John E. Burrill, who died in Lenox, Mass., September 24th, aged 71 years, was for many years one of the best known corporation lawyers in New York.

Thomas Hawksley, who died in London, England, September 23d, was one of the best known of English engineers, having had charge of the design and construction of many works of the first rank.

Col. Francis W. Oury, a mining engineer and member of the Governor's staff, of Arizona, was shot and instantly killed at Arivaca, Ariz., by three masked men. Robbery was the cause.

Thomas Colden Ruggles, a prominent civil engineer, died on the 22d inst., at his home, in Yonkers, N. Y. Mr. Ruggles, who was 79 years old, was widely known as a civil engineer, and laid out the Harlem Railroad, as well as the Erie road. He built fortifications at Covington and Cincinnati in the Civil War.

Thomas Ford, assistant superintendent of the New South Wales mineral exhibit, at the World's Fair, Chicago, died at his place of residence, in that city, September 22d. He was 31 years of age, and leaves a wife and three children. For the past seven years he has been employed in the same capacity at different expositions, in the interest of the New South Wales mineral department. In 1886, at the Colonial and Indian Exposition, in London; in 1887, at the Adelaide Jubilee, South Australia; in 1888, at the Melbourne Centennial Exposition; in 1889, at the New Zealand & South Seas Exposition; in 1890, at the London Mining Exhibition, in London, and in 1892, at the Launceston Exhibition, in Tasmaria. Mr. Ford was respected by all he came in contact with, and he had the esteem of all his superior officers. By his long experience, adding at each successive exhibition to the knowledge gained in the previous ones, Mr. Ford was enabled to make the exhibit at Chicago what it is, perhaps the best arranged and most attractive in the Mines Building. A memorial signed by his many friends in the Mines Building will soon be presented to the New South Wales commissioners.

SOCIETIES AND TECHNICAL SCHOOLS.

British Association for the Advancement of Science.—The 63d annual meeting was opened September 13th, at Nottingham, England, with President Dr. Burdor-Sanderson in the chair.

Illinois Mining Institute.—The second meeting of the year was held in Springfield, Ill., September 14th. A report on the Chicago Exposition was presented and received. A number of new mining appliances were presented for inspection and generally discussed. A paper on the "Smoke Nuisance in Mines" was then read by Mr. Cummings, who called attention to the fact that even in mines where there were no powder blasts or gob fires, there could be seen a constantly ascending smoke column from the up-casts, while the walls of the mine throughout were stained with soot from the lamps used by the miners, burning what is known as "miners' oil." The writer thought, for the protection of the health of miners, some authority ought to intervene to prescribe some form of light that would afford relief. Reform in such a matter, he claimed, could not be brought about through individual option, because no one miner would provide what would be of no use without the concurrence of his neighbors.

Committees were appointed to inspect and report upon the practical claims of electricity in mining, soon to be illustrated in the opening of an extensive plant at Oskaloosa, Ia., and of a long wall under-cutter at Chenoa.

Engineering Association of the South.—At the meeting in Nashville, Tenn., September 14th, Mr. W. G. Williamson discussed the relations between the board of public works, the city council and the city engineer. He concluded that in small cities the existence of both the council and the board causes needless complications, though in large cities the great amount of improvements makes the board more efficient than a committee of the council; that the engineer should be appointed by the board, but should not be embarrassed by their appointing any of his assistants; that the engineer should receive orders from but one authority, and if these orders are contrary to this engineer's judgment he should be allowed to put his objections on record; and that it is not good economy to bind an engineer to let work to the lowest bidder. Mr. Walter G. Kirkpatrick read a paper describing a "System of Triangulation for River Surveying." The fieldwork consists of reading four angles at each of a series of stations on one river bank, the distance between the first two stations and that between the last two being measured by tape. The computation is simple, a connected series of sine proportions, so that the addition of logarithms is cumulative, each addition evolving the length of a line in the system. The platting is by chords, affording such a check that an error can hardly escape detection. The system, though accurate, requires but little more work than the ordinary transit and stadia survey; the computation can be framed from the field notes, then all the logarithms taken from a table, then all the additions made, evolving all the necessary sides, with which the platting proceeds in a connected chain. Mr. J. S. Walker discussed the roof trusses of the World's Fair buildings. Mr. Hunter McDonald described the methods and progress in sinking caissons 40 ft. under water, for the foundations of the Johnsonville bridge over the Tennessee River, now under construction.

INDUSTRIAL NOTES.

The Alabama Pipe Works, Bessemer, Ala., has resumed operations.

The National Rolling Mill, at McKeesport, Pa., started up September 25th, with its usual force.

The Lebanon (Pa.) furnaces were banked September 22d, throwing about 200 men out of employment.

The large mills of the Kelly Nail and Iron Company, Ironton, O., started September 21st for a steady run.

The No. 1 blooming mill and rail mill, at the Pennsylvania Steel Works, Steelton, Pa., shut down September 23d.

The New Jersey Copper Extraction Works, at Elizabethport, N. J., have resumed, after a suspension of three weeks.

The Oxford Iron and Nail Company, Oxford, N. J., has started up its nail mill and is preparing to reopen the rest of the works.

After two months of idleness the rolling mill of the Valentine Iron Company, Bellefonte, Pa., has again been put in operation. The mill will be run as long as the company can sell its iron.

B. R. Wellford has been appointed receiver of the Vulcan Iron Works, of Richmond, Va., one of the best known iron manufacturing establishments in that city, making a specialty of bolts and nuts.

The Southern Iron Company, Nashville, Tenn., is to be reorganized by the bondholders, who have voted to accept 35% of their present holdings in bonds of a new company, and 65% in preferred stock.

All the furnaces of the puddle mill, of the Bethlehem Iron Company, started work September 27th. An official of the company states that that department would probably be kept working steadily in the future.

The Pittsburg Tool and Steel Company, with a capital of $100,000, has been granted a charter. The directors are John C. Jamison, David H. Summers, Richard W. Bailey, David P. Thomas and Alexander M. Johnson.

It is substantially agreed by the men to accept the proposition of the Coleman-Shields Company, of Niles, O., and start the old mill, subject to the scale of wages that may prevail among the mills after the present differences are settled.

All the departments of the Cambria Iron Company, at Johnstown, Pa., with the exception of the mechanical departments, and one blast furnace, closed down on the 25th inst. There is no certainty as to when these mills will resume.

The Pottsville Iron and Steel Company, of Pottsville, Pa., has ordered a reduction of wages at its rolling mills of 10%, except in such cases where it will make a rate below 10 cents per hour. Puddlers will receive $3 per ton. The mills will suspend on October 2d for a week.

The stockholders of the Brown-Bonnell Iron Company, of Youngstown, held their annual meeting recently, electing the following officers: Samuel Mather, president; Robert McCurdy, vice-president; John F. Taylor, treasurer; E. P. Williams, secretary; John I. Williams, general manager.

The Carnegie Thirty-third street mill, Pittsburg, Pa., shut down on the 25th inst., in all departments. On September 23d the laborers were all paid off in full. They were notified that their places would be open for them under different arrangements. The new rules are that 12 hours, instead of 10, shall constitute a day's work, and the rate of pay 10 cents per hour, instead of $1.25 per day.

The Riehle Brothers Testing Machine Company, Philadelphia, has reproduced its latest catalogue on a very small scale, showing everything that is in the full-sized book. This company has recently designed a new type of automatic electric testing machine, the first of which was made to cover the specifications of Mr. F. H. Lewis, who has had much experience with all kinds of testing machines. The machine has been finished and delivered; a second has been sent to the Columbian Exposition, and several more have already been ordered, and are in process of construction. These machines can be made in all sizes from 10,000 to 30,000 lbs.

The firm of Edwin Harrington, Son & Co., of Philadelphia, manufacturers of hoisting machinery, has been dissolved, and the interests of the partners purchased by a corporation composed of John A. McGregor, formerly assistant superintendent of the Brown & Sharpe Manufacturing Company, of Providence, R. I.; H. S. Haskins, M. H. Harrington and E. L. Harrington, the partners in the late firm, and M. J. Morrissey, Robt. F. Scott and Roger Sherron, formerly with the late firm, who will continue the business under the name or style of Edwin Harrington, Son & Co., Incorporated. The officers of the company are: H. S. Haskins, president; M. A. Harrington, treasurer, and Roger Sherron, secretary.

The Ashtabula Steel Company, Ashtabula, O., has let a contract to the Shiffler Bridge Company, Pittsburg, for the construction of buildings, including a main building 380 × 100 ft., with two wings 340 × 65 ft.; a blooming mill 420×60 ft., with two wings 240×20 ft., and several smaller buildings. The plant will include 20 boilers of 120 H. P. each, and two 1,800 H. P. engines made by A. B. Farquar & Co., who will also furnish the boilers. The former will cost $15,300, and the latter $15 700. The Industrial Iron Works, of Bay City, Mich., will furnish the electric traveling cranes, consisting of two 3-motor cranes of 40 tons capacity, and two 3- motor cranes of 10 tons capacity. The largest of these will have a traversing speed of 100 ft. per minute with load. Their cost will be $26,600.

At the conference held in Pittsburg, Pa., September 26th, between iron and steel manufacturers and officials of the Amalgamated Association, a further reduction of 10% in the wages of finishers was made in order to enable the union manufacturers to start their idle plants. The minimum basis of the card rate was changed to 1½ cents per pound. With every advance of one-tenth of one cent in the selling price of steel wages will advance 2%. When the card rate goes above 3 cents, wages will advance 3% for every one-tenth, the same as last year's scale. James McCutcheon, of Lindsay & McCutcheon, was chairman of the conference, which was largely attended. When the scale for the bar and guide mills was settled A. M. Byers wanted a further change in the rate for muddling. This the employees refused to grant. The puddling rate was reduced once from $5.50 to $5 per ton. Mr. Byers said the reduction was insufficient, as many of the non-union mills are paying but $4.50 and some as low as $4. He said he

would not start his puddling furnaces until the rate is reduced. Another conference on puddling may be held.

MACHINERY AND SUPPLIES WANTED.

If any one wanting machinery or supplies of any kind will notify the "Engineering and Mining Journal" of what he needs he will be put in communication with the best manufacturers of the same.

We also offer our services to foreign correspondents who desire to purchase American goods, and shall be pleased to furnish them information concerning goods of any kind, and forward them catalogues and discounts of manufacturers in each line.

All these services are rendered gratuitously in the interest of our subscribers and advertisers; the proprietors of the "Engineering and Mining Journal" are not brokers or exporters, nor have they any pecuniary interest in buying or selling goods of any kind.

GENERAL MINING NEWS.

ALASKA.

Baranoff Queen.—The ledge at this mine has been opened up, showing a width of 18 ft., and work has been begun on a tunnel.

Silver Bay.—On this mine the tunnel is now in 80 ft., and work has been begun on a shaft at the end of the tunnel. The "Alaskan" says that specimens of the quartz brought in are full of sulphurets, and though no test has been made as yet to the gold-bearing quality of the quartz, there is no doubt but that the ore is increasing in richness.

Yukon River.—The Juneau City "Mining Record" reports that placer mines have not done very well on the Yukon this season. At Franklin, Miller and Davis creeks the returns have been small. The "Record's" informant, a miner who has just returned, says: As a rule the diggings in the Yukon are very low and will not average more than a bare living. I think there will be all of 100 men coming out this fall, some over the Summit and others down by St. Michael. Henkuk River is now the mining place. Mr. Bettles has started a trading post 600 miles up the river, but the diggings are 250 miles further up still.

ARKANSAS.

Christy Fire Clay Company.—This company has secured an option on 6,000 acres of coal land in the Ouachita River district. The coal is found in a large deposit, the vein being 42 in. wide. The coal is said to burn very freely and without smoke.

CALIFORNIA.

Mono County.

Bulwer Consolidated Mining Company.—The latest weekly official letter says: We are stoping out ore from winze No. 1 below the 200 level. Winze No. 2 was sunk 7 ft. We are also stoping out ore above the north drift, 200-ft. level. The mill was kept running steadily. We crushed during the week 143 tons of ore. Average battery samples, $31.19 per ton. Tailings, $8.07 per ton.

Mono Mining Company.—At the annual meeting of the stockholders of this company, held in San Francisco last week, 27,905 shares were represented and the following officers elected: H. D. Walker, president; L. Osborn, vice-president, and E. P. Danforth, R. H. Sinton and W. P. King, directors. M. E. Willis was re-elected secretary; his financial statement showed a credit of $4,925,.56.

Nevada County.

Spanish.—This mine, in Wood's Ravine, which was owned by A. R. Lord and A. S. Lord, has been sold to Colgate & Co., New York. It is said that $55,000 was paid for the property. A. L. Begbie has been placed in charge of the property, which, it is understood, will be worked upon a large scale.

COLORADO.

Boston & Colorado Smelting Company.—A late issue of the Boston "Herald" says: Hon. H. P. Hill, manager of the Boston & Colorado Smelting Company, has lately been in Boston, and gives an encouraging report of the operations of this concern. It is the only smelter in Colorado which continued uninterrupted operations during the silver panic. It has 400 men at work, and is able to supply the plant with ores. Mr. Hill reported a good market for gold and copper, but not as good a market as formerly for silver.

Boulder County.

Free Coinage Mining Company.—This company has expended a large amount of money in systematically developing its mines and in perfecting the new mill. Several new King concentrating tables have been added and successfully treat the large bodies of low-grade gold concentrating ore with which the mine abounds. The company employs quite a force.

Jordan Tunnel.—Arrangements have been made to pay up arrears, it is said, and a new management has taken hold. The object of the tunnel is to cut the Orphan Boy group at a depth of about 700 ft. The breast is now in about 600 ft. and will be driven 300 ft. more, when cross-cuts will be driven both ways.

Chaffee County.

Silent Friend Mining Company.—This company filed papers of assignment September 19th to Charles M. MacNeill. The mine was patented in 1884. Among other property owned is the B. & O. mining claim, a three-quarter interest in the Surprise mine, all of which properties are located in the Monarch mining district. No schedule of assets and liabilities was filed. Inability to pay its debts is given as the reason for the assignment.

Clear Creek County.

Silver Plume.—Most of the mines in the mountains surrounding Georgetown and Silver Plume have resumed operations. Mining is going on apparently much the same as a year ago, but less profit is being made. The sampling works and the concentrating mill at Georgetown are both active once more. The Seven-Thirty and the Stevens are producing as usual, while at the Pelican the lessees are doing well with a good sized lode of first class ore.

El Paso County.

A late issue of the Cripple Creek "Crusher" gives the following items of mining news from that camp:

C. O. D.—The shaft is down 90 ft. and is producing a richer grade of sylvanite ore from the bottom than has been heretofore encountered in the mine. This has become one of the heaviest shippers in the district.

Elkton Mining Company.—According to the Cripple Creek "Crusher" the best strike of the month in the district was made last week in the new shaft of the Elkton mine, which is the south extension of the Raven. The vein opened is 8 ft. wide and has two pay streaks, one on each wall, and each over 20 in. wide. The quartz is unlike that found in the Raven, being crystallized to a greater degree, and to some extent is stained with flourine. Assays have been had that run very high. The shaft is only 16 ft. deep, 10 ft. of which are in the wash, but in sinking that depth half a carload of this high-grade ore has been taken out. Between these two streaks of high-grade is a soft, decomposed quartz talc and clay that pans well. The high-grade ore will be sent to the smelter. A one-half interest in the property is under bond and lease to M. D. Mattoon. The shaft is being substantially timbered and will be housed in.

Gladstone.—This mine, on Globe Hill, is shipping to the mills. It has some high-grade ore on the dump, which will be sent to the smelters.

Gold & Globe Mill.—This mill is now running all of its 40 stamps; 10 of them are employed on gravel from the bed of the creek, wherein rich placer gold was found. As the company owns a large bar of this gravel, it will, if it continues to show pay values, quit receiving custom ore and employ the entire mill on placer dirt.

New Zealand.—The shaft is now 215 ft. deep. The vein which is being followed is nearly vertical, and at the bottom is 5 ft. wide.

Rebecca.—The owners of this mine, adjoining the C. O. D. on the south, are sinking near the line for the C. O. D. vein.

Gilpin County.

The Central City "Register Call" publishes the following items:

Black Hawk.—There are 480 stamps at work in the vicinity of Black Hawk. The number of stamps will probably soon be increased. In August 187 carloads, or 2,805 tons, of ore and concentrates were shipped to the Denver smelters. This represents an increase of 34 carloads, as compared to the same month of last year.

Climax.—This lode keeps one battery of five stamps running at the Polar Star mill. From the 480-ft. level the milling ore averages 5 oz. gold per cord. The same class of ore yields 2½ tons of concentrates to the cord which net $25 per ton. The smelting ore nets from $60 to $140 per ton. The Wheeler 25-stamp mill is being put in order and will be run exclusively on Climax ore.

Frontenac.—This mine has a new 35-H. P. engine and double friction improved hoister.

Dougherty.—This lode, in Lake district, is being worked under lease and bond. The main shaft is down 105 ft., and the ore assays $60 per ton, the principal value being gold.

Hydrant.—This lode, up Prosser Gulch, has been sold for $10,000. The purchaser conveyed the same claim the same day to the Gold Collar Mining Company for $25,000.

The Boulder Placer Mining Company.—This company has secured a large tract of placer ground, partly in Boulder County and partly in Gilpin County.

Lake County.

(From our Special Correspondent.)

Dunkin.—The lessees on this mine are working in a very fine body of iron ore and have increased their shipments to 20 tons daily, which is being sent to the Globe smelter, Denver.

Huckleberry.—The concentrating mill on this property was burned to the ground this week. The origin of the fire is unknown. The plant was totally wrecked, involving a loss of $17,000, on which is $10,000 insurance. It is not probable that the mill will be rebuilt for the present.

Iroquois.—The streaks of lead ore opened up a few weeks ago in this property have developed into an iron body and the lessees are shipping 25 tons daily.

Maid & Henriette.—On this consolidation it is found necessary to put the men to work gradually, as the water has risen to some of the lower workings and the timbers in many places need replacement. As the old drifts are cleaned out and the ore bodies reached, additional men will be put on.

The Harvard.—This mine has been started up with a small force. Thorough development work has already been begun.

Walcott.—Work on the new shaft is being carried forward rapidly. A complete hoisting plant is to be placed in position very soon.

White Cap.—Shipments of a fair grade carbonate ore are steady, and it is understood that the force is to be increased and shipments made heavier.

Ouray County.

American Belle Mines, Limited.—The superintendent reports as follows for August: National Belle mine: Expense on revenue account, including developments, $5,436; shipped 280 tons ore, value (estimated), $3,088; ore sorted ready for shipment, 200 tons, estimated value, $1,400. Silver Bell mine: Expense on revenue account, $1,700; shipped 80 tons; ore value (estimated), $680.

New Guston Silver Mines, Limited.—The report for August: Ore shipped, 730 tons; value (estimated), $16,776; mine expenses, $13,947. The mine superintendent, under date of August 12th, reports: No. 9 level, width of ore in bottom of winze, 1 ft.; average value, 8 oz. silver per ton; gold, 1 oz. per ton. Elnora tunnel winze, sunk 18 ft.; total depth, 35 ft. Considerable quartz carrying iron pyrites has been met with during the last 10 ft. of sinking. A contract has been let to sink the winze 50 ft., at $8.50 per foot.

New Guston Company, Limited.—The superintendent reports the output for August as follows: Ore shipped, 730 tons; value (estimated), $16,776; mine expenses, $13,947.

San Juan County.

Bonito.—This mine, in the New Bear Creek camp, is showing very well. A shipment of 50 sacks of ore was made last week, which ran from 8 oz. to 36 oz. gold per ton.

Little Maid.—This mine is taking out some very good ore, and the ore body is increasing in width.

San Miguel County.

Shipments of ore and concentrates from Telluride for the week ending September 22d amounted to 561 tons, of which 550 tons came from the Smuggler-Union and 11 tons from the Hector Mining Company. Total shipments from the camp since January 1st aggregate 15,277 tons.

Golden Crown.—It is reported that the property known as the Golden Crown, Osceola, Suffolk and Globe mines, all situated in a group, near Ophir, has been purchased by an Eastern syndicate. The price paid was not made known. The property has been worked with more or less activity for several years. The ore has been treated by a 20-stamp mill. The capacity of the mill will be doubled; in fact, a contract for the 20 extra stamps was let before the new purchasers left Telluride.

CONNECTICUT.

Fairfield County.

Ponus Street.—At this place, near New Canaan, a discovery of gold-bearing rock is reported by local papers. Similar discoveries have been reported at intervals for many years, but have never resulted in anything, the gold being in quantities too small to pay for working. The rock now found, probably a pocket, is said to carry copper and nickel, besides gold.

Middlesex County.

Meadow Wood.—A ledge of valuable granite has been found at this place, near Essex, and is to be worked.

New Haven County.

Leete Island.—This quarry is now at work, with about 75 men employed.

FLORIDA.

Shipments of Florida phosphates for the eight months ending August 31st are given by the Bartow "Courier-Informant" as follows, in tons: Brunswick, 18,469; Savannah, 12,427; Punta Gorda, 46,597; Tampa, 75,044; Fernandino, 73,967; interior points by rail, 15,000; consumed in State, 6,000; total, 248,504 tons. Of these shipments 54,791 tons were to domestic and 193,713 tons to foreign points.

Citrus County.

Florida Phosphate Syndicate.—This company has begun operations and will put up the first plant near Anita.

Wright Phosphate Company.—This company, says "Florida," has started work with one single log washer of W. T. Adams' Machine Company, and one double steel log-washer from McLanahan & Stone. One dryer is Cummer's pattern, the other is a new design from McLanahan & Stone. The daily capacity is 100 tons.

Marion County.

Bonnie May Phosphate Company.—This company's buildings were recently destroyed by fire. The machinery, however, was not damaged, and work will continue.

GEORGIA.

White County.

Glover Mine.—At this mine some good ore was struck recently, and a quantity has been taken out which runs about $15 per ton in free gold. A shaft is to be sunk at once on the new vein.

IDAHO.

Alturas County.

Star Mine.—A vein of galena about 2 ft. wide has been discovered in this mine. It is located about 60 ft. from the old workings at a depth of 300 ft.

Boise County.

Boise County Mining Company.—After spending over $3,000 and sinking only 3 ft. in the bed rock shaft, this company sspended work a short time ago. Accidents and the lack of proper suctions for the pumps prevented it from being able to handle the water. Ten miners have made a proposition to the company to go ahead and sink and receive double wages in case pay gravel is struck.

Shoshone County.

Bidwell & Co. have put in a flume from Alder to Nugget Gulch, and are now working day and night with the very best of results.

Charles Mead is shipping an amount of ore from his lode, west of Mother lode, to the King mill.

Great preparations are being made for the spring all along the line, from the King mill to Bear Gulch. Wolf has opened a good vein on the Denver, just below Mead's lode.

Murray District.—The Mother lode mine will shut down soon until the five additional stamps are put in.

ILLINOIS.

Du Page County.

Glen Allen Kaolin Mining Company.—This company has been organized to work kaolin beds. The capital stock is $250,000, and the incorporators are H. L. Dietz, H. L. Everett and Wm. Taylor. Office in Chicago.

Jersey County.

Grafton Quarry.—At this quarry, says "Stone," 240 men are employed on a contract to furnish the government riprap to be used along the Mississippi River, north of Alton. The monthly payroll amounts to $7,000.

La Salle County.

Springfield Coal Company.—This company has been organized with $25,000 capital stock, to mine coal near Streator. The incorporators are John S. Baer, J. D. Roberts and C. H. Rathburn.

INDIANA.

Vigo County.

Grant Coal Mining Company.—This company has completed the reconstruction of the plant at its mines, near Burnett, and is now prepared for an output of 2,000 tons per day. The hoisting machinery, engines, etc., for the new plant were furnished by Prox & Brinkeman, of Terre Haute, Ind., while the coal-cutting machines and compressor, the latter being calculated for 16 cutters, were supplied by the Ingersoll-Sergeant Company, of New York and Chicago. Six machines are in operation now. The coal mines large and is run over an 18-ft. screen, something rather unusual, as 12 ft. is generally considered the size.

KANSAS.

Atchison County.

A coal vein was recently discovered near Atchison, which is 26 in. thick where found, and of fair quality. Mining on this vein has already been begun.

MAINE.

Franklin County.

Maine & New Hampshire Granite Company.—This company has just put in a new tramway at its North Jay quarries. About 150 men are now employed.

MICHIGAN.

Copper.

Tamarack, Jr., Mining Company.—The mine produced 102 tons of mineral in August. When the sixth level is connected the output of the mine will probably be 130 to 140 tons of mineral. Tae outstanding obligations of the mine are about $80,000.

Delta County.

Northern Michigan Marble Company.—This company has been organized with a capital of $50,000, to work lately discovered deposits of white marble near Escanaba. The following are officers: President, Edwin Foster; vice-president, R. C. Harper; directors, J. T. Wilcox, A. L. Foster and E. W. Eldridge.

Iron—Marquette Range.

Pittsburg & Lake Angeline Iron Company.—This company has decidel to close down C shaft at the old mine, which will throw 300 men out of employment.

Iron—Menominee Range.

Chapin Mine.—Receiver Becker, of the Marine Bank, has applied to Judge Johnson to fix a minimum price at which he can sell the Chapin iron mine. B. K. Miller, Jr., had prepared an order fixing the maximum price at $200,000. He said that he had consulted several of the largest creditors on the subject and they were satisfied with the figure. Colonel Krez wanted the maximum price fixed at $250,000, says the Norway "Current." The loan of the Milwaukee Marine Bank to the Chapin Mining Company amounted to $500,000. The bank has 40,007 shares of the capital stock, the nominal value of which is $1,000,000.

Cleveland Cliff Mining Company.—A press dispatch from Ishpeming says that the pumps have been stopped at the Barnum mine and the shafts will be allowed to fill with water. This means that the mine will be idle for some time. The company has nearly 200,000 tons of ore in stock.

MINNESOTA.

Duluth County.

Shipments of iron ore for the past week were 28,000 tons from the Mesaba, and 21,837 from the Vermilion. Rails are being laid on the Duluth, Missabe & Northern road, from Iron Junction west to the Lake Superior mines, 18 miles.

Iron—Mesaba Range.

(From our Special Correspondent.)

Lake Superior.—At this property water is so troublesome that operations are seriously hampered. The pumping capacity is to be increased.

Sanitary.—On this property, owned by the Musser-Sanitary Lumber Company, of Stillwater, 15 pits have been sunk into the ore, considerable of which is a high-grade manganese. A deposit of 1,800 ft. by from 600 to 1,200 ft. is test pitted.

Sheridan.—This company, working under a sublease from the Roucheleau, has put down pits near McKinley, where railway cuttings disclosed a non-Bessemer ore. Close by here the company has a large and excellent deposit.

Pipe Stone County.

Sioux Valley Stone Company.—This company is shipping stone from its quarries, at Jasper, on several large contracts.

Stearns County.

Niven & Ashworth Quarries.—Work at these quarries is increasing, and the force has been enlarged.

Vermilion Range.

(From our Special Correspondent.)

A scheme for pumping Shagawa Lake, at Ely, has been advocated. This is close to the Chandler mine, and it is believed by some that a great deposit of granular ore, similar to Chandler, lies at the bottom of the lake. The work is enormous and is hardly likely to be undertaken.

MISSOURI.

Iron County.

Syenite Granite Company.—This ompany has resumed work in its quarry, at Graniteville, having reached an agreement with its workmen on prices. The agreement applies also to other granite companies in the district.

Jasper County.

(From our Special Correspondent.)

Joplin, Sept. 25.

During the past three weeks the mines of this lead and zinc district have showed a slight improvement. There has been a demand for all the ore produced. The prices paid for zinc ore have not been up to the expectations of the operators, the price having ruled from $15 to $18 per ton. Lead ore has ranged in price from $18 to $21.25 per thousand, the market closing Saturday evening at $21. The Lead and Zinc Mine Operators' Association have now incorporated and secured their charter and will meet to-morrow and elect a board of directors, and they will then decide on some plan for future operations, so as to dispose of the zinc ore to the smelters on its assay value. Many are under the impression that the object of this association is a combine of the mine operators against the smelters. Such is not the case. The operators will simply ask the smelters to purchase their ore on its assay metal value and the price paid for the ore to be governed by the quotations of the metal (spelter) in St. Louis, the smelter paying for the ore less transportation and their reduced charges. Following are sales of ore from the lead and zinc belt for the past three weeks: September 11th, 4,326,100 lbs. of zinc ore and 1,115,810 lbs. of lead ore, value $54,938; September 18th, 4,041,420 lbs. of zinc ore and 984,820 lbs. lead ore, value $52,029.

Following are the sales of ore from the different camps for the week ending September 25th: Joplin mines, 1,300,360 lbs. zinc ore and 315,955 lead, value $18,560; Webb City mines, 822,770 lbs. zinc ore and 41,000 lead, value $7,189; Carterville mines, 535,370 lbs. zinc ore and 99,560 lead, value $6,755; Zincite mines, 39,160 lbs. zinc ore and 5,290 lead, value $453; Oronogo mines, 161,050 lbs. of lead, value $2,925; Galena, Kan., mines, 760,090 lbs. zinc ore and 105,370 lead, value $7,937; district's total value, $43,819; Granby mines, 277,120 lbs. zinc ore and 76,500 lead, value $3,485; Aurora, Lawrence County, Mines, 1,033,090 lbs. zinc ore and 208,880 lead, value $10,591; lead and zinc belt's total value, $57,895.

MONTANA.

Deer Lodge County.

Hope Mining Company.—This company will pay October 2d a dividend of 25 cents per share, or 2½% on the stock. The total amount paid in dividends up to date has been $508,252. The company is now running its mill full capacity on a good grade free-milling silver ore, and expects to continue running, notwithstanding the low price of silver.

Gallatin County.

Black Pearl Mine.—Very flattering reports of the quality and quantity of the coal found in Rock Canyon have been made. The mine is the property of Dr. T. C. Witherspoon, who owns about five claims surrounding it. He has developed the mine about 50 ft. by a tunnel, and an 8-ft. vein is being worked.

Lewis & Clarke County.

(From an Occasional Correspondent.)

Bald Butte Mining Company.—This company, having added 20 stamps to the mill, will commence October 1st working 40 stamps.

Piegan Mine.—This gold mine in the same district (Marysville) gives promise when developed of being equally as good as the Bald Butte.

Whitlach Union & McIntyre.—This company, at Unionville, employs between 30 and 40 men on development work and expects in the course of six months to increase their mill capacity from 15 tons daily to 45 tons, all of which will be paid for by their present small mill.

Madison County.

Buffalo Mine.—This mine is developed to a depth of 300 ft., with drifts 200 ft. east and 200 ft. west on the ore body, 5 ft. wide. This first-class gold ore is shipped mostly to Omaha. The second-class ore returns $35 and $40 per ton, and is milled near the mine.

Wachita Extension Mine.—This mine, owned by B. F. Murks, is under lease by Jack Butler & Co. The main shaft is down 180 ft., but drifts have been run 100 ft. east and 100 ft. west from the 100-ft. level on a 4-ft. vein, averaging $20 for second class. A pay streak, 18 to 20 in. wide, running through the center, yields free milling ore, which is treated at the Colorado smelter, and runs about $65 per ton net. The Wachita is idle at present.

(Reported for the "Engineering and Mining Journal.")

Lexington.—This mill, at Butte, will likely start up if the reports of gold strikes in Madison County prove correct. It seems the gold prospects of this county are looking up. An old miner came into Butte a week ago with $1,000 worth of coarse gold dust, the result of a two-weeks clean up in Meadow Creek.

Judge Keigan, of Helena, has made several purchases in Meadow Creek, and J. B. Haggin has bought up a dozen claims in the same place.

The Blaine mine, above the famous Washington Bar, in Meadow Creek, is reported sold to Butte parties. The price is not stated, but a fortnight ago $50,000 was refused for it.

Silver Bow County.

(Reported for the "Engineering and Mining Journal.")

Butte.—Since my last report this camp has begun to suffer the effects of the general business depression, and it is difficult to say how seriously the condition may yet become before the cause of gloom is removed. A grave mistake was made lately by a local paper in announcing that the Anaconda mine was about to give employment to several hundred men. Idle men from all parts of the State have flocked into Butte on the strength of the report, and none have yet secured work nor even prospects of it. Just five months ago over 9,000 men were working in Silver Bow County. For the past three months less than 500 have had steady employment.

Of the seven smelters in Butte—the Butte & Boston, Boston & Montana, Parrot, Colorado, Heinze, Butte and Bell—but two are working, the Butte & Boston and the Heinze.

Of the four quartz mills—the Alice, Moulton, Lexington and Silver Bow—the Moulton only is in operation.

Of the five great leads—the Rainbow, Gray Rock, Syndicate, Anaconda and Parrot—not one is being worked.

NEVADA.

Lincoln County.

During the month of August the Eureka & Palisade Railroad Company received in transit to Salt Lake and Vallejo Junction, Cal., 672 tons of ore, as follows: From Eureka District, 466 tons; White Pine, 296 tons, and Nye County, 2 tons. Following were the lots shipped from the Eureka District: From the Hamburg mine, 228 tons; Eureka Consolidated, 154 tons; Richmond, 42 tons; Delaware, 31 tons, and Idaho, 11 tons. From White Pine District: Zoanni Brothers, 66 tons; Frank Paul, 36 tons; Minoletti, 10 tons; McEllin, 48 tons, and C. A. Mathewson, 46 tons. The ore shipped last month was of a generally higher grade than has been mined here of late years, much of it being richer in gold and lead.

Jim Crow.—A one-half interest in this property, situated in Ferguson district, has been purchased for $20,000 by Messrs. J. Nesbitt & Bro., of Pioche.

Pioche Consolidated Mining and Reduction Company.—The principal work now being done by this company, says the Pioche "Lode," is in the Mazeppa, which is being opened up from the 1,200-ft. level through the No. 3 shaft. The connection be-

tween the No. 3 and Mazeppa is made, and prospecting is actively going on in some of the old winzes of the Mazeppa, and is proving satisfactory. There are yet 10 ft. to be run from the 1,200-Mazeppa to connect with the raise from the 1,300-Yuba.

Polaris Mining Company.—According to the Pioche "Lode," this company is doing the most active work in the district. The company commenced operations at a depth of 45 ft., and now has the shaft 200 ft. deep. The present ore chute is now 130 ft. in depth by 100 ft. in length, and above this there are yet 70 ft. unexplored.

Storey County—Comstock Lode.

At a recent meeting the Virginia Miners' Union voted against accepting the reduction of miners' wages from $4 to $3.50, which was proposed by the mining companies. Disregarding this action, the Gold Hill Miners' Union, September 19th, voted for a reduction to $3.50 per day. It is believed that the result of the Gold Hill vote will omplicate matters on the Comstock. Many miners belonging to the Gold Hill union live in Virginia City. Should the compromise be complied with by the Gold Hill mine managers, the members of the Virginia Miners' Union cannot work in the south-end mines or the Gold Hill miners labor north of the divide.

Justice Mining Company.—September 18th, in the United States Circuit Court, at Carsons, Judge Hawley decided in favor of this company in the suit brought against it a year ago by Book and Blowey. The plaintiffs located within the limits of the West Justice and James G. Blaine, owned by the Justice Mining Company, a claim they called the Peerless, and developed a vein of rich-bearing quartz. It was claimed that the defendants never did discover the vein, that no annual work was perfomed by the corporation, that the course referred to in the notice of location, "northerly," is insufficient to enable one to trace the claim; that no affidavit of labor had been filed, as required by law, etc. Judge Hawley held that the locators having marked their claim by stakes and measurements so the boundaries could be readily traced, it made no difference whether there was a notice of location on the ground or not, and, if there was a notice on the ground, what part of the ground it was on. As to the affidavit of labor, the Court decided that the filing of such an affidavit simply afforded prima facie evidence of the performance of annual work, which evidence could be supported by oral testimony. On the question as to what is a ledge locatable under the mining law, which was the principal question, Judge Hawley held with Justice Field in the Eureka-Richmond case.

Nevada Mill.—This mill, which has been steadily at work on ore from the Potosi and Savage, has suspended operations for a few days, owing to the decreased output of those mines. When sufficient ore accumulates the mill will be started up again. The suspension of work involves the laying off of about 30 men.

Savage Mining Company.—The latest weekly official letter says: From the 1,100 level we are extracting ore of fair grade at several points above the sill floor of this level. We are also doing considerable prospecting work between this level and the 950 level. During the week we have hoisted 248 cars of ore, shipped to the Nevada mill 210 tons and melted 210 tons. Car samples average $23.48; battery samples average $21. Bullion yield for the week $2,913.54. We have finished retimbering the north compartment of the hoisting shaft from the 1,300 to the 750 level.

NEW HAMPSHIRE.

Coos County.

Kilkenny Granite Company.—This company is making arrangements to operate on a large scale.

NEW YORK.

Essex County.

Essex Iron Company.—Mr. H. H. Chittenden has been appointed receiver on petition of stockholders. The company was organized in 1891 to work iron mines in Moriah, near Port Henry. A large part of its capital was spent in building a railroad from the mines to connect with the Delaware & Hudson Canal Company's line. Gustav Lindenthal, of Pittsburg, Pa., is president and James M. Lewis treasurer.

Madison County.

Hot Springs Barytes Company.—This company has been organized, with $50,000 capital, to mine barytes in Madison County, and also in North Carolina. The incorporators are T. W. Bayaud, C. A. Diamond, C. F. Errehond, G. D. Bayaud, New York; John Doherty, Hot Springs, N. C. The office is in New York.

Orleans County.

Downs & Gorman Quarry.—A solid stone 86 ft. long, 12 ft. wide and 7 ft. thick was quarried in this quarry, about one mile south of Holley. This is one of the largest stones ever quarried in that vicinity.

NORTH CAROLINA.

Cabarrus County.

(From our Special Correspondent.)

Buffalo Mining Company.—This company has purchased the Barrier mine, opened a vein of ore 22 ft. in width, and is erecting a five-stamp mill with boiler and engine, which will be in operation in October.

Nugget Gold Mine.—At this mine they are preparing to operate on a larger scale, and are erecting a pumping station on Dutch Buffalo Creek for the purpose of sending water to their property where many large nuggets have been found during wet seasons when water was obtainable for washing the surface. They have opened a fine galena vein carrying over 1 oz. of gold to the ton.

Surface Hill Gold Mine.—After being abandoned for some years this mine has come into prominence again, as rich ore has been found on the dumps. When thrown out it was supposed to be of no value.

Montgomery County.

(From our Special Correspondent.)

Burrell Mountain.—Tributers at work on this mine have found some very fine nuggets together with fine gold.

Sam Christian Gold Mine.—This mine, famed for big nuggets, is also being worked by tributers, who are finding gold in the old-style way. The large 500-H. P. pumping plant, erected by the English company, has been sold. Capt. Henry A. Judd, of New London, is in charge of the property.

Randolph County.

(From our Special Correspondent.)

Hoover Hill.—This mine continues to produce about $1,000 per month at an expense of $500 or $600.

Jones Mine.—This mine has been bonded to Pittsburg gentlemen who hope to solve the problem of working this great mass of low-grade gold ore.

Rowan County.

(From our Special Correspondent.)

Graf Mine.—At this mine they have been hauling in lumber and erecting a concentrating plant. It is reported they propose to ship the concentrates to Newark, N. J., for treatment. The ore is auriferous pyrites in quartz, and there are many deposits on the property, which is about 1,600 acres. Assays of the ore run from $10 to $30 per ton.

Honeycut.—Mr. N. B. McCandlass, of Salisbury, N. C., is contemplating the erection of a 10-stamp mill on this mine. At present they are operating with a small Chilean mill.

OHIO.

Montgomery County.

Lewis & Talbott Quarry.—Work has been resumed at these quarries with a small force, about 50 men.

PENNSYLVANIA.

Anthracite Coal.

Lehigh Valley Coal Company.—A press dispatch from Bellefonte says: The verdict in the great ejectment case between this company and Messrs. Long & Leggett has been rendered in favor of the former. The case has excited a great deal of interest, as it involved a large amount of money.

Philadelphia & Reading Coal and Iron Company.—In Philadelphia, September 27th, Special Master Crawford filed a report in the United States Circuit Court authorizing the receivers to compromise a large number of suits, chiefly brought by various parties for the recovery of damages caused by coal dirt deposited on lands by floods. There were over 100 of these suits, but many have been settled by private agreement, and it is recommended that the receivers be authorized to compromise the rest.

Bituminous Coal.

Advices from Pittsburg state that the miners at Joseph Walton & Co.'s pits, near Elizabeth, have decided to go to work next week at 2¾ cents per bushel, which is a reduction of a quarter of a cent below the rate of mining current last June when operations were suspended. This is the first resumption among the Monongahela River miners, and is taken as indicative of the rate that will be current when there is a general resumption. All the mines along the river are idle. But little work has been done since last June, and there will not be much coal mined until there is a rise in the river. About 23,000,000 bu. are loaded for the South and West awaiting a boating stage. It is hardly likely that the rate of mining will remain long at 2¾ cents, as it is below the rate at which miners can be secured to work in ordinary times.

RHODE ISLAND.

Washington County.

Smith Granite Works.—These quarries have resumed work after two weeks' stoppage, with a somewhat reduced force.

SOUTH DAKOTA.

Lawrence County.

Alpha Mine.—High-grade ore has been discovered at this mine, in Nevada Gulch.

Bigham Mine.—Two shifts of men are now at work on this property. Operations now are a tunnel from the hillside to connect with the discovery shaft. The tunnel is now in 97 ft., but it must be driven 100 ft. further to connect. The property is owned by Messrs. Whittaker, Forrest, O'Brien and Hart. The ore of the property is free milling of high grade.

Bahama Mining Company.—The stockholders of this company met September 21st, and elected a board of directors for the ensuing year, consisting of D. R. Short, M. R. Russell, R. Rebsamen, Wm. Manning and Jas. Baker, who perfected their organization by the election of M. R. Russell as president; J. Rebsamen, secretary, and D. R. Short, treasurer and general manager. Assessment No. 2 of one and one-half mills per share was levied on the capital stock, delinquent October 28th, date of sale November 15th.

J. R. Mining Company.—This company is adding 10 stamps to its mill.

Richland Mining Company.—At the annual meeting of this company held September 21st the following board of directors was elected: D. R. Short, M. R. Russell, J. Rebsamen, Porter Warner and John Baker. The board organized by the election of M. R. Russell, president; J. Rebsamen, secretary, and D. R. Short, treasurer and general manager. An assessment of one and one-half mills was levied on the capital stock, which will become delinquent on October 28th, and sold on November 15th.

Pennington County.

Keystone Mining Company.—The mine and mills, east of Hill City, have been shut down for an indefinite period. The monthly payday was passed by the company this month, and every employee quit work. The company paid only 50% of the payroll in July, and but 25% in August.

UTAH.

Western Onyx Company.—This company has been organized with John Mendlik, president; A. J. Sutherland, seretary; A. Hammond, treasurer. The office is at Eau Claire, Wis. The quarries to be worked are in the southern part of the territory.

Juab County.

Bullion-Beck & Champion Mining Company.—Superintendent Burch now has about 100 men on the payroll, says the Tintic "Miner." A small quantity of ore was partially treated in the recent run at the Tintic mills, which are being operated by the company. A new leaching process will be tested as soon as the leachers arrive from Salt Lake.

Salt Lake County.

Butterfield Tunnel.—Work on this tunnel, at Bingham, has been suspended. It has already been driven a mile and a half, and over $200,000 has been spent.

Eighteen Eighty-Nine Mine.—The ore bodies of this property continue to improve both in extent and quality, and a large amount of the rich mineral is being taken out.

Hanauer Smelter.—This smelter, which has been closed down for repairs, will start in a short time, three stacks being blown in.

Leona Mine.—Murphy & Will, the owners, have put on a force of 12 men at this mine, and are now working a day and night shift.

Markham Mill.—Preparations are being made to begin operations at the new mill. The first run will be made on ore from the Leona mine.

Tiewaukee Mine.—This property, after lying idle for a number of years, is again to be worked.

U. & I. Mine.—A carload of first-class ore has been shipped from this property. If the returns are satisfactory, an attempt will be made to ship second grade ore.

Summit County.

Crescent Mining Company.—At a meeting of the board of directors of this company held on September 15th, another assessment, No. 2, of 3 cents per share, was levied on the capital stock of the corporation payable immediately. This assessment was levied for the purpose of clearing up the indebtedness of the company, laying in supplies for the winter and to provide for the commencement of the work of driving the Alliance tunnel to a point underneath the Crescent's incline shaft.

Home Coal Company.—This ompany has put in a new hoisting plant. It is expected that the output will be greatly reduced this year on account of the many shutdowns of the Park City mine.

Ontario Mining Company.—The drain tunnel is now being driven at the rate of 6 ft. per day. The work is now in a crystallized limestone, and as there is not a seam in the rock, no timbering is necessary. During 1892 the tunnel was driven 1,890 ft., at a cost of $37.60 per foot. Up to September 14th 1,740 ft. had been added from the outside and 170 ft. from the inside, a total of 1,910 ft. The total work done up to the present time is 12,585 ft., leaving bt 2,415 ft. to complete the total length of 15,000 ft. If the present rate is kept up the work will be completed by May 1st, 1894. On August 14th work was commenced on the 1,500 level, in shaft No. 2, and the tunnel has been driven 170 ft. Unless such a volume of water is encountered that it cannot be handled this work will continue until the two forces meet. The force in the tunnel engaged in all capacities is now about 60 men. When this work is completed the operation of the mine will be greatly facilitated, and the expense involved in working the immense pumping plant will be stopped.

Park City.—The mining situation at this place shows very little improvement, says the Salt Lake "Tribune." The Ontario and Daly are working between 300 and 400 men, but are not taking out a great deal of ore. All efforts are now concentrated on the drain tunnel, which, it is expected, will be completed next year. Work is now being prosecuted from each end, the force on the inside working from shaft No. 2. The tunnel is now reported to be in good ground, and satisfactory progress is being made.

Putnam Mining Company.—At the annual meeting of this company held in Salt Lake, September 18th, the following officers were elected: H. G. McMillan, president; Wm. M. Ferry, vice-president; W. Mont. Ferry, secretary and treasurer. J. J. Daly and James Moray, with the above officers, constitute the board of directors; an executive committee composed of H. G. McMillan, J. J. Daly and W. Mont. Ferry to receive proposals for working and developing the mine. The property is composed of 12 claims lying parallel to and adjoining the Daly, Daly West and Anchor, and in the past considerable work has been done in the way of developments.

VIRGINIA.

Louisa County.

(From our Special Correspondent.)

Mining enterprises along this mineral belt continue to attract attention, the latest actual development being on the Lett property, which lies between the Arminius and Mineral City. About 20 years ago some prospecting was done on this territory, at a time when the Arminius was being worked for copper, but for some reason the development shaft was carried no deeper than into the pyrites under the iron cap, where considerable water was found. Within three months Mr. Fred. R. Lett, of New York, has commenced operations at the location of this abandoned shaft, has erected a very substantial building which incloses the shaft-head, boiler, hoist, storeroom, etc.; retimbered the shaft to a depth of 50 ft., and work is now going on to develop the vein, just found. Mr. Lett expects to soon have sufficient development to warrant the putting in of a switch from the Arminius mines railway, and will erect several dwellings and other buildings to carry on extensive work.

Arminius Mines.—These mines continue to ship their regular tonnage, and have not as yet discharged a man or lessened the hours of work since the panic was felt throughout the State. It is believed that no other mine in Virginia can show such a record for the times, and it is gratifying to the management that existing contracts will carry the work on at average rates throughout the present year. Several properties along the gold belt are now being prospected and within a few weeks a party of experienced Western miners will start for an extended tour over the entire belt from the James to the Rappanhannock River.

Sulphur Mines Company.—This company met with a severe loss by fire on Friday, the 8th inst., the new millhouse, built under contract by some New York engineers, having been completely destroyed with all its valuable machinery, and several of the attached and outlying buildings with connecting tracks, etc.; two box cars on the switch near the mill, and other property were consumed. The loss is said to be fully covered by insurance. No work has been done at these mines for some time, and the mill has never been started, as it is understood that it did not meet the requirements of the contract, and could not concentrate the ores to advantage. Underground workings, which have been filled with timber and cord wood for years past were fired from the shaft near the burning mill and are still on fire.

Virginia Pyrites Company.—This company is pushing development on their property, which adjoins the Sulphur mines, by means of shafting and diamond drill work. Their plant is now complete, with milling facilities, compressors, etc.

WASHINGTON.

Spokane County.

Spokane & Great Northern Mining Company.—This company controls the Providence, Skylark and Defiance mines, in the Boundary Creek district. On the Skylark two shafts are being sunk. The Providence has a shaft now down 45 ft., which will be continued to 75 ft., where cross-cutting will commence. The first carload shipped from this mine ran 223 oz. in silver and $107 in gold per ton.

WISCONSIN.

Iron—Gogebic Range.

Norrie Iron Company.—This company closed down its mines last week, throwing 300 men out of employment. The Norrie is the largest iron mine on the range and usually employs 1,500 men, but most of these were discharged some time ago. The company has mined this year about 400,000 tons, of which 250,000 tons have been shipped. This is less than half the output of 1892.

(From our Special Correspondent.)

Shipments of iron ore from the Gogebic via Ashland have been 37,154 tons for the week, and 929,532 for the season. Mines shipping last week were five, Ashland, Aurora, Newport, Norrie, Tilden.

WYOMING.

Albany County.

Douglas Consolidated Mining Company.—About 1,000 ft. of ditch has been completed on this company's ground, and work is still in progress.

Fox Creek Placers.—Several claims have been located and men are at work on the ditches with a view to active operations in the spring.

(From an Occasional Correspondent.)

Douglas Consolidated Placer Mining and Milling Company.—These claims saddle the boundary line between Albany and Carbon counties, about 50 miles west of Laramie, and some 50 miles southeast of Rawlins. They include Muddy Lake, Beaver and Douglas creeks. "Beaver" on the U. S. Map of 1892, should read "Douglas," and the latter creek be shown as entering the North Platte, opposite Collins. Much local interest is shown in this enterprise, as being an earnest effort by solid business men, to open up with a sufficient capital, after what is said to have been a thorough prospecting by experienced miners, a promising gold placer. They are pushing the installation, for the last advices report nine miles of road made down Douglas Creek; a board and cookhouse, bunkhouse and blacksmith shop erected; 750 ft. of ditching driven for bed rock flume. This ditch is 4½ ft. wide on bottom, by 5 ft. deep, and for 100 ft. is cut 7 ft. deep through rock. It opens up a bar of auriferous ground containing 240 acres. The parties interested are chiefly Lamarie and Denver men.

FOREIGN MINING NEWS.

BELGIUM.

A mass meeting of the miners of the Mons coal district was held in Wasmes, Province of Hainaut, September 24th. Resolutions in favor of an immediate strike were passed almost without dissent.

BRITISH COLUMBIA.

Morning Star.—The owners are sinking a double compartment shaft and now have on the dump 50 tons of ore that will mill $275 to the ton. The shaft will be sunk 150 ft. and crosscut, says the Spokane "Review."

Wide West Mine.—A promising strike is reported in this claim near Fairview. The mill is running day and night on Wide West ore, and 35 men are at work stoping and sinking a shaft on the mine.

Kaslo-Slocan.

Blue Bird.—This mine shipped 30 tons of ore to the San Francisco smelter by the steamer "State of Idaho."

Washington Mining Company.—This company has let a contract to Lane C. Gilliam to haul 1,000 tons of ore to Kaslo. The price to be paid is $27 per ton. The work of moving the ore began on September 5th.

ENGLAND.

The question of prolonging the coal miners' strike now seems to be entirely one of money. Last week the Miners' Association succeeded in making a loan of £16,000 at 5% interest, the repayment being guaranteed by five men, all of whom are wealthy and are prominent in political life. The funds of the Association were nearly exhausted.

Dolcoath Tin Mine.—A very valuable improvement is reported from Dolcoath. In cutting the plat at the 425, with a view to sink the engine shaft below that level, Capt. Josiah Thomas has met with a most valuable piece of ground in the lode south of the shaft. It is already valued at from £40 to £50 a cubic fathom, though they do not yet know the size or the extent of the discovery, which seems to indicate the existence in the west of the set of the great course of tin that ran through the east of the mine and proved so remunerative in the working.

MEXICO.

San Luis Potosi.—According to the "Mexican Trader" the San Luis Potosi smelter has 11 out of its 12 furnaces in full blast, the quantity of ore treated being about 400 tons daily. No mines have been closed down in the San Luis Potosi district. General confidence among the ore buyers and smelters is increasing and there is now a good market for ores that could not be sold at any price a month ago. High grade lead ores particularly are in active demand.

Durango.

(Reported for the Engineering and Mining Journal.)

Durango Steel and Iron Company.—This company is pushing its improvements to completion, including a new blowing engine with blowing cylinder of 72×48 in., and a new battery of five boilers. This will increase the capacity of the blast furnace to some 40 tons per 24 hours. The company is also reconstructing and enlarging the rolling mill, which will have a capacity of some 25 tons finished bar iron. This company works the Cerre Mercado ore and has its works at the foot of the mountain, so that the ore does not cost delivered in this stock house to exceed 25c. per ton of 60% metallic iron. The works when completed will be the largest south of the Rio Grande.

NEW BRUNSWICK.

Memramcook Gold Mining Company.—At a special meeting held in Dorchester recently, the stockholders voted to order the purchase of a 50-stamp mill. There was much discussion, a party opposing the erection of so large a mill at present.

NEW SOUTH WALES.

East Broken Hills Consolidated Limited.—This company at its third ordinary general meeting held September 11th, passed the following resolutions: 1. That it is expedient to effect an amalgamation of this company with the Australian Broken Hill Consols (Limited), and that with a view thereto the company be wound up voluntarily, and that Mr. L. J. Woodman, be and he is hereby appointed liquidator for the purpose of such winding up. 2. That the conditional agreement submitted to this meeting made between the company of the one part and the Australian Broken Hill Consols (Limited) of the other part be and the same is hereby approved, and that the liquidator be and he is hereby authorized and directed, pursuant to Section 161 of the Companies Act, 1862, to adopt the said agreement and carry the same into effect with such modification as the said liquidator may think expedient.

On the same day the shareholders of the Australian Broken Hill Consolidated Company agreed to purchase the property of the above named company and at the same time agreed to increase the capital to £600,000 by the creation of 100,000 new shares of £1 each.

Yalgogrin.—A new discovery of gold ore is reported to have been made at Yalgogrin. Over 70 applications for permits have been made and the field will be thrown open.

QUEENSLAND.

Charters Towers District.—The output of this district for July was as follows: The crushings, 16,136 tons ore for 19,431 oz. gold. The increase for the first seven months of 1893 is 6,389 tons of ore for 16,721 oz., the yield from 109,238 tons of ore being 155,155 oz.

RUSSIA.

Two new blast furnaces and a rolling mill are to be built in the Eastern Oural district, and iron works are to be established on the Kaura River in western Siberia. The cause of this activity is the demand for iron for the new Siberian railroad.

SOUTH AFRICA.

Transvaal.

Cyperghat Coal Company.—The output of this company for 1892 was 21,000 tons—an increase of 9,000 tons over that of 1891.

Witwatersrand.—The gold output for July reached the enormous total of 136,069 oz.—an increase of 9,900 oz. over July and an increase of 33,747 oz. over August of 1892. The total for 1893 to September 1st is 927,209 oz. against 1,210,868 oz. for the whole of 1892 and 729,237 oz. for 1891.

The total output of the district to date has been 3,727,897 oz.

TASMANIA.

Mount Lyell.—The "Australian Mining Standard" says: This mine again furnishes some sensational assays in bulk from the "pocket" or rich vein discovered under the management of Dr. Peters; 33 bags of ore, weighing 1 ton 13 cwt., returned silver at the rate of 3,072 oz. per ton, and 20% of copper (total amount of silver, 5,069 oz.); 217 bags of ore weighing 9 tons 18 cwt., returned silver at the rate of 844 oz. per ton and 27% of copper (total amount of silver, 8,355 oz.); grand total, 11 tons 11 cwt. for 13,424 oz. of silver, worth, at 2s. 9d. per ounce, £1,845 16s. The present output is 20 bags of ore per day, and the mine is 30 tons ahead of the packers.

VENEZUELA.

El Callao Mining Company, Limited.—The August output reached 2,700 oz. of gold.

El Caratal Mine.—Mr. Skertchly reports, after making 300 assays, that he estimates the quantity of tailings suitable for treatment at 102,000 tons and the value at £91,050.

WEST AUSTRALIA.

Coolgardie Gold Fields.—Mining Warden Finnerty, writing of these new gold fields, states that in all 49 leases and 33 reefing claims have been applied for, though several of them have been abandoned. Everywhere gold is seen freely displayed through the stone raised, although only very shallow sinking has been attempted on most of them. In conclusion the warden writes that the prospects of the field are very good, and that for some considerable time to come men in limited numbers will be able to at least make good wages at alluvial.

The Perth "West Australian," writing on Coolgardie prospects, again refers to the large number there. It says: There will soon be 4,000 at the present rate of increase, but the accounts of the privations now being endured by many, owing to the difficulty of getting supplies through from the boggy nature of the roads, must cause real apprehension as to what will happen if the numbers are largely augmented, as they must shortly be. It is a serious question, if the population has to depend wholly upon carting supplies for some 300 or 400 miles. The contract for the railway to Yilgarn does not expire until November, 12 months, but it would be well to see if some arrangements could not be come to with the contractor in order to expedite the opening of this all-essential means of communication.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Sept. 29.

Statement of shipments of anthracite coal (approximated) for week ending September 23d, 1893, compared with the corresponding period last year:

	Sept. 23, 1893. Tons.	Sept. 24, 1892. Tons.	Difference.	
Wyoming region	498,001	496,234	Inc.	1,767
Lehigh region	152,025	150,850	Inc.	1,175
Schuylkill region	283,706	308,032	Dec.	24,326
Totals	933,732	955,116	Dec.	21,384
Total for year to date..	30,281,020	29,560,143	Inc.	720,877

PRODUCTION OF BITUMINOUS COAL, in tons of 2,240 lbs., for week ending September 23d and year from January 1st:

Shipped East and North:	1893. Week.	1893. Year.	1892. Year.
Phila. & Erie R. R.	2,669	62,163	63,352
Cumberland, Md.	90,960	2,985,499	2,740,270
Barclay, Pa.	417	38,107	38,866
Broad Top, Pa.	6,597	451,855	437,505
Clearfield, Pa.	63,061	2,818,075	2,871,748
Allegheny, Pa.	26,565	908,991	928,586
Beach Creek, Pa.	52,529	2,104,318	1,751,918
Pocahontas Flat Top	55,974	1,995,455	1,883,034
Kanawha, W. Va.	59,682	2,360,505	1,772,247
Totals	358,394	13,755,971	12,487,526

Shipped West:	1893 Week.	1893 Year.	1892 Year.
Pittsburg, Pa.	14,929	878,373	929,116
Westmoreland, Pa.	26,501	1,403,583	1,237,514
Monongahela, Pa.	14,773	504,701	471,077
Totals	56,203	2,786,657	2,637,501
Grand totals	413,379	16,541,399	15,125,027

PRODUCTION OF COKE on line of Pennsylvania R. R. for the week ending September 23d, 1893, and year from January 1st, in tons of 2,000 lbs.: Week, 31,212 tons; year 3,236,655 tons; to corresponding date in 1892, 3,917,348 tons.

Anthracite.

Nothing has occurred in the anthracite coal trade since the time of our last report to justify a change in the comments on it which we then made. The situation continues the same, and the improvement which we reported has kept on. Sellers report a freer movement of coal; the fall trade is commencing and business has been as active as could be expected. There is no new feature of interest to report. The buying has been of the same nature as it was last week, or fortnight, but there seem to be more buyers, which indicates that the better times now being experienced in this market are not confined to a few.

A meeting of the sales agents was held in this city on Thursday. It was entirely harmonious, and satisfaction was expressed as to the present condition of the trade. It was very wisely decided to have prices for October unchanged, so that the "July circular" will be in effect for another month. We venture to predict that the chances for obtaining these prices will be better next month than they were last. The market was not prepared for an advance. We understand that it was recommended that the output for October be restricted to 3,500,000 tons; from another source we learn that no official "recommendation" was made on this point and that no figure was fixed, but that there was an understanding that discretion would be exercised in keeping the production within proper limits. Be it as it may, there seems to be a greater disposition this year to act harmoniously, and the prospects for the coming season are better than many anticipated.

Nothing new has developed in the matter of the Lehigh Valley Coal Company and the individual operators. The situation remains altogether unchanged, and the terms on which business is being transacted will continue in force until the middle of October. It is expected that the interested will arrive at a definite and mutually satisfactory agreement before that time. The operators are firmly fixed in their determination not to accept anything less than 60% of the tidewater prices.

Rumors and reports of all sorts have been as numerous as usual this week. Yesterday it was said that the operators had offered to lend the Lehigh Valley $2,000,000 (with the company's bonds as collateral), in consideration of which the Lehigh Valley Coal Company would purchase the operators' coal on the 60% basis and pay for it on the 15th of each month. Where the operators would obtain the aforesaid $2,000,000 was not stated. Later in the day the report came that the proposition had been made by the company to the operators, which seemed more likely, and that the operators had refused, which was even more plausible.

In short, we can say, all rumors to the contrary notwithstanding, that no final settlement has yet been reached.

The Reading official circular rates, subject to the usual commissions, are as follows, f. o. b. at its New York harbor shipping ports:

	Broken.	Egg.	Stove.	Chestnut.
Hard white ash	$4.00	$4.25	$4.60	$4.60
Free white ash	3.90	4.15	4.60	4.60
Shamokin	...	4.50	4.80	4.60
Schuylkill R. A.	....	4.50	4.95	4.75
Lykens Valley	5.15	5 80	6.25	5.50

Pea, $2.50@$2.75; No. 1 buckwheat, $1.80@$2.00; No. 2 buckwheat, $1.50@$1.80.

The Reading Railroad system reports that its coal shipment (estimated) for last week, ending September 23d, was 295,000 tons, of which 40,000 tons were sent to Port Richmond and 28,000 tons were sent to New York waters.

Bituminous.

There is little or no change to report of the soft coal market. The brisk autumn trade continues and most of the mines are working on full time. The demand, of course, is chiefly on contract orders, but this is a small transient trade which comes from consumers, who, for some reason or other, do no procure their supply for the season. It is expected, however, that consignees on season contracts will, on account of the business depression, take their minimum amount specified in their contracts instead of the maximum as they have usually done. In the Maine ice ports consignees are urging shipments on their orders to fill up their stocks for the winter.

The movement of coal at all the shipping ports except Baltimore is good; and the trouble with that port seems to be caused by the Baltimore & Ohio Railroad, which is advancing the allowances on reshipments, thereby forcing coal to go to the other ports.

Cars are in good supply generally, and the movement is good, excepting on the Pennsylvania Railroad, where there seems to be something of a blockade which is causing loaded cars from the mines to back up on the lateral roads. The Pennsylvania people promise that this blockade will be removed within a few days, and that all coal standing will be promptly forwarded thereafter to shipping ports.

The very troublesome blockade of last year commenced in the same way, and it is to be hoped that the present will not prove a forerunner of last year's experience

Coastwise vessels are in good demand and supply, with rates a little higher than they were at the time of our last report. We quote this week from Philadelphia: To Boston, Salem and Portland, 75c.; Sound ports, 65c.; Newburyport, 82@90c.; Portsmouth, 80c.; Bath and Bangor, 75c. alongside; Gardiner, 80c. alongside and towage; Wareham, 85@90c.; Dover and Saco, 95c.@$1 and towages; Baltimore, Newport News and Norfolk, 10c. above these rates. We hear of some large vessels making charters for two or three trips at the above rates.

Boston. Sept. 21.

(From our Special Correspondent.)

There is very little if any improvement to note in hard coal. The yards are simply buying from hand to mouth, although they are moving a great deal of coal as a rule. If there were only more confidence in general business all this might be different. The consumers would probably be purchasing more coal and the retailer, in his turn, might be taking more into his yards, anticipating his wants in a measure. Prices are well maintained notwithstanding the dullness. Business cannot long be deferred, and when it does start there will be considerable of it.

It is this that makes owners of coal firm in their views. Individual operator's coals, of course, continue to be cut. The companies are getting the following prices, net: Stove, $4.45; egg, $4; free broken, $3.75; chestnut, $4.45. Individual coals are offered for from 16 to 20c. under these prices in the market.

In soft coal trade is of moderate proportions as yet. One or two agents say they are having rushing business, but do not expect it will continue much longer, as the mills they trade with are fast filling up. On the other hand, others say September so far has been a quiet month with them, and October ought to show an improvement in business. I fully expect to see more coal moved in October than this month. Prices continue firm, mainly because freight rates strong. We quote Cumberland on cars here $3.65; New River and Pocahontas $3.55; Clearfield, $3.30.

Freight rates are very firm all along the line. They are: From New York, 60@65c.; from Philadelphia, 80c.; from Baltimore 85c.; from Newport News and Norfolk, 75@80c.; to Sound Points, 65c.

In a retail way trade is of very fair proportions. Prices are firmly maintained by dealers. We quote: Stove, $6.25; nut, $6.25; egg, $6.00; furnace, $5.75; Franklin, $7.75; Lehigh egg, $6.25; Lehigh furnace, $6.00; soft coal, $4.25.

The receipts of coal at the port of Boston for the week ending Sept. 23 were 73,772 tons of anthracite and 37,907 tons of bituminous, against 94,454 tons of anthracite and 16,499 tons of bituminous for the corresponding week last year. Since January 1st the receipts have been 1,495,606 tons of anthracite and 814,138 tons of bituminous, against 1,555,455 tons of anthracite and 565,571 tons of bituminous for the corresponding time last year.

Buffalo. Sept. 28.

(From our Special Correspondent.)

Practically the anthracite coal trade has developed no features of interest for a long time. Quietude still continues and prices are unchanged. Dealers are philosophical; they know that consumers must come to the front when necessity compels them, and it is only a question of time, for fuel must be had. They only await cold weather to resume active work.

Bituminous coal is moderately active at nominally unchanged quotations. The delay in the Senate on the silver question has thrown manufacturers back to the position they were in some months since and work in many instances has been discontinued in their establishments.

As will be seen in another paragraph, lake shipments of coal are more active, but rates of freight continue at the low figures. This is offset, however, by an improvement of about ½c. per bushel on lake freights on grain from upper lake ports to Buffalo.

The coal in the sunken propeller "S. E. Peck" has been purchased by Detroit parties, and will be secured and docked at that port by the end of this week.

The shipments of coal westward by lake from Buffalo from September 17th to 23d, both days inclusive, aggregated 97,974 net tons, distributed as follows. 46,875 tons to Chicago, 10,135 to Milwaukee, 3,350 to Racine, 500 to Alpena, 9,700 to Duluth, 500 to Gladstone, 1,800 to Manitowoc, 1,000 to Menominee, 1,260 to Superior, 6,725 to Toledo, 675 to Green Bay, 1,500 to Marquette, 2,200 to Washburn, and 964 to Windsor. The rates of freight were 30c. to Chicago, Milwaukee, Racine, Green Bay, Manitowoc, Marquette, Washburn and Menominee; 40c. to Portage, Sarnia and Sault Ste. Marie, and 20c. to Duluth, Superior, Gladstone, Windsor and Toledo.

Chicago. Sept. 27.

(From our Special Correspondent.)

The sudden cold snap, together with the reports of a probable advance in price October 1st, has imparted life to the anthracite coal trade in all branches. More orders were placed on Monday and Tuesday than in any other two days since May. The fact of the matter is that the public have had an awakening and realize that such a thing as frost still exists, the result being that every shipper and retailer has already more than he can do for this week at least. The country trade have sent in telegrams requesting immediate shipment of any delayed orders placed early in the season. The prospect now for a steady resumption of business in anthracite is very encouraging, there is some expression of doubt on the part of some that it is only a flash in the pan and that the return of warmer weather will cause another quiet interval. The consensus of opinion, however, is that a fairly goodly movement of hard coal may now be expected with the chances of it continuing through the season.

Referring to the advance in price hinted at in dispatches from the East it would be as well for the mining companies to bear in mind that there is a competitor in this market who should receive consideration—natural gas. A number of the largest consumers, hotels and big apartment houses, have had their heating plants fitted up with appliances for burning this fluid, under contracts that their bills shall not be in excess of what they were last year for anthracite or bituminous coal when prices were less than they are this year.

Circular prices are at the following rates: Lehigh lump, $6.25; large egg, $5.85; small egg, range and chestnut, $6.10. Retail prices per ton are: Large egg, $6.75@$7; small egg, range and chestnut, $7@$7.25.

Bituminous coal continues in moderate demand, but the cold weather we are now experiencing has brought a good deal of inquiry and demand from the country trade. The starting up of mills and small factories have added materially to the tonnage during the past few days, and, as these mills continue to increase under the more favorable financial condition of the country, the soft coal trade is assuredly on the eve of a healthy prosperous season. Railroads are taking more fuel, but so far have not commenced stocking up to any extent, so it is safe to infer that demand from this source alone will be very large when they get started. The reported shortage at Northern lake points will scarcely cut as much of a figure as anticipated, because the commercial business has been so light thus far this season and the depressed condition of affairs with railroads indicates that they will not use as much coal this year as in the past year. There will probably be no advance in Illinois lump, or Indiana block next month, but Hocking will be $3.25 October 1st. Prices of bituminous per ton of 2,000 lbs. f. o. b. Chicago are: Pittsburg, $3.35; Hocking Valley, $3.25; Youghiogheny, $2.25; Illinois lump, $2.70; Brazil block, $2.75.

Coke continues to show improvement, and as factories start up there is more foundry and crushed coke required. There is no great increase as yet, but gains are made every day. Quotations are: $4.10 furnace; $4.35@$4.40 foundry, crushed; $4.40 Connellsville. West Virginia: $3.90 furnace; $4.10 foundry. New River: Foundry, $4.40; Walston, $4.10 furnace, $4.35 foundry.

Pittsburg. Sept. 27.

(From our Special Correspondent.)

The coal trade continues exceedingly dull, prices weak and unsatisfactory. A meeting of railroad operators was held and a committee appointed to confer with the miners. The operators cannot consistently ask the men to come down to the 74 cent rate and there is no way for the miners' organization to compel the few diggers now working at the reduction to strike for the scale rate. The miners of Joseph Walton & Co., in the second pool on the Monongahela, have voluntarily gone to work at 2¾c. per bushel, which is a reduction of a quarter of a cent below the rates paid last June when operations were suspended. In Pool No. 4 the miners offered to go to work at 2c. per bushel; their offer was accepted and a number of men are at work.

Connellsville Coke.—Trade is improving. The indications are that the total estimated production of the region for the week will show a considerable increase over the preceding week. The present

slump in the coke trade began about the middle of June when the weekly shipments fell below 6,000 cars; from that time on they kept decreasing until two weeks ago when they had dropped to the 2,000 car mark. The indications for the furnaces, which consume over three-fourths of the coke made, are growing brighter; this is especially so in the district surrounding Pittsburg and Chicago. The Frick company shipped within the past ten days about 75 cars to Philadelphia of select coke for export. This coke goes to Mexico by boat instead of being shipped across the continent by rail. Present rates for the various kinds are: Furnace coke, f. o b. cars at ovens, $1.35 per ton: foundry coke, f. o b. cars at ovens, $1.65 per ton; crushed coke f. o. b. cars at ovens, $1.75 per ton. Add 70c. per ton, and you have the price of coke delivered at Pittsburg.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Sept. 29, 1893.

Pig Iron Production.

Fuel used.	Week ending Sept. 29, 1892.		Week ending Sept. 29, 1893.		From Jan., '92.	From Jan.,'93.
Anthracite.	67	27,750	44	20,587	1,314,684	1,171,417
Coke.....	128	116,605	56	58,126	5,215,784	4,591,413
Charcoal...	43	9,733	28	5,570	406,377	320,636
Totals....	238	154,088	128	84,283	6,936,845	6,083,466

Pig Iron.—Diligent inquiry failed to establish the fact that any noteworthy improvement has taken place in the iron market since our last report. The conditions are the same now as they were then. The buying is of the same character. We hear of low offers in some quarters, but in this market prices rule about the same as they have for some weeks past—neither more nor less. The tidewater prices of the Thomas Iron Company on the new basis are as follows: No. 1, $14.50 per ton; No. 2, $13.50; No. 3 or No. 2 plain, $12 75. For regular brands we quote as follows: Northern brands: No. 1, $14@$14.50; No. 2, $12.50; gray forge, $12. For Southern iron we quote: No. 1, $13.25@$14; No. 2 F., $12@$13; No. 1 soft F., $12@$13; gray forge, $11.75@$12—all at tidewater. Scotch irons are quoted: Coltness, $21.50@$22; Eglinton, $19.50@$20; Summerlee, $20.

Billets and Rods.—We do not hear of much business in this market. Sellers continue to offer billets at exceedingly low prices. We quote: Steel billets, tidewater. $21.50@$23; foreign, $27.75@$28.50; wire rods, $30@$31; foreign, $39@$40.

Manufactured Iron and Steel.—There is nothing of interest to report of manufactured iron and steel. There is a dearth of orders and the market is as dull as it can be. We quote: Angles, 1·75@1·9c.; axles, scrap, 1·80@2·10c., delivered; steel, 1·75@2c.; bars, common, 1·45@1·60c.; refined, 1·60@1·85c. on dock; beams, up to 15 in., 1·70@2c.; 20 in., 2·10@2·30c.; car truck channels, 2@2·10c.; channels, 1·90@2c. on dock; steel hoops, 1·8@1·9c., delivered; links and pins, 1·70@1·80c.; plates, flange, 2@2·10c.; firebox, 2·5@2·8c.; flange, 2·10@2·25c.; marine, 2·50@2·75c.; sheared, 1·85@2·10c.; shell, 1·95@2·10c.; tank, 1·75@1·9)c.; universal mill, 1·75@1·90c.; tees, 1·85@2·05c., all on dock.

Merchant Steel.—We do not hear of any business of consequence in this market, which continues very quiet. Quotations are: Tool steel, $6.50@$6.75 and upward; tire steel, $2@$2.10; toe calk, $2.30@$2.40; Bessemer machinery, $2.10@$2.20. Bessemer bars, $1.60@$1.70; open hearth machinery, $2.25@$2.30; open hearth carriage spring, $2.10@$2.20; crucible spring, $3.75@$4.

Old Material.—Tae market for old material continues quiet. Some sales are reported at low prices.

Rail Fastenings.—The market for rail fastenings is dead. Quotations remain: Fish and angle plates, $15@$15.80 at mill; spikes, 1·80@1·90c.; bolts and square nuts, 2·45@2·50c.; hexagonal nuts, 2·55@2·60c., delivered.

Spiegeleisen and Ferromanganese.—There is nothing doing in either ferro or spiegel. Quotations are nominally as follows: 10 to 12% Spiegel, $22@$22.50; 20% $25@$25.50. Ferro, $56@$57.

Steel Rails.—We do not hear of any business in this market. The dullness which has prevailed for some time past continues unabated. Quotations are $29 mill or tidewater. Girder rails, $31@$33. Desirable orders for rails can be placed much below quotations, the mills making delivery at distant points at nominal freights or otherwise evading the combination prices.

Tubes and Pipe.—Business in tubes and pipes is very dull. Ruling discounts on carload lots are as follows: Butt, black, 57½, 10 and 5%; butt, galvanized, 50, 10 and 5%; lap, black, 67½, 10 aad 5%; lap, galvanized, 57½, 10 and 5%.

Buffalo. Sept. 28.

(Special Report of Rogers, Brown & Co.)

The bright prospects of the early part of the month are not sustained at the close. September opened out with considerable activity in the iron business, although without noticeable change in prices. The dropping off of business is attributed by many to the uncertainties which arise from the dilatory action of the Senate on the silver menace which the people considered virtually settled by the prompt action of the House. Prices are firmer than one month ago, but without any quotable change, the slight firmness being attributable almost entirely to the further curtailment of production and the stronger position which many furnaces find themselves in.

Prices quoted below represent the range of this market on the cash basis: No. 1 X. foundry strong coke iron, Lake Superior ore, $13.75; No. 2 X foundry strong coke iron, Lake Superior ore, $13.25; Ohio strong softener No. 1, $14; Ohio strong softener, No. 2, $13.25; Jackson County silvery No. 1, $16 50@$17.30; Jackson County silvery No. 2, $16@$16.80; Lake Superior charcoal, $16; Tennessee charcoal, $16; Southern soft No. 1, $13.15; Alabama car wheel, $18; Hanging Rock charcoal, $20.50.

Chicago. Sept. 28.

(From our Special Correspondent.)

The slight improvement in the demand for crude as well as finished iron and steel noted last week not only holds, but some little additional increase is noted. So far the increased movement has not carried with it any hardening in price, except in one or two grades of Southern iron, and this because of the rather short supply. Consumers of manufactured and the higher forms of iron and steel are buying rather more freely, but there is a strong vein of conservatism pervading the whole market and purchases are cautiously made.

Pig Iron.—Demand for local coke iron shows a decided gain, and several fair sized orders, covering forward deliveries, were placed under contract this week. The number of small orders which have been received, accompanied with instructions for immediate delivery, are strong indications that there are no stocks of consequence in the hands of consumers. Some of the inquiry now coming forward is made with a view to cover business in contemplation or in actual negotiation. Southern coke iron is also improving in demand, and as some furnace agents have withdrawn inside quotations and cancelled a number of options at low prices, smelters show more interest. We note an inquiry for 1,500 tons, which will probably be closed this week. A few orders have been declined at prices which would have been accepted a month ago. Lake charcoal iron is in moderate request in small lots with some inquiry for round quantities Quotations per gross ton f. o. b. Chicago are: Lake Superior charcoal, $16.00@$16.50; Lake Superior coke, No. 1, $13.50@$13.75; No. 2, $12.75@$13.25; No. 3, $12.25@$12.50; Lake Superior Bessemer, $14.00; Lake Superior Scotch, $14@$14.50; American Scotch, $15.50@$16.00; Southern coke, foundry, No. 1, $13.50; No. 2, $12.00; No. 3, $11.50; Southern coke soft, No. 1, $12.00; No. 2, $11.50; Ohio silveries, No. 1, $16.50; No. 2, $16.00; Ohio strong softeners, No. 1, $16.25; No. 2, $15.75; Tennessee charcoal, No. 1, $16.50; No. 2, $16.00; Southern standard car wheel, $18.25@$18.75.

Structural Iron and Steel.—Small lots of beams and other building shapes are still being ordered, but the tonnage of these and bridge material is light. Quotations, car lots, f. o. b. Chicago, are as follows: Angles, $1.70@$1.80; tees, $1.95@$2.05; universal plates, $1.70@$1.80; sheared plates, 75c.@$1.85; beams and channels, $1.75@$1.85.

Plates.—Warehouse business as reported by mill agents shows a continued improvement and 10 to 20 ton orders are increasing. Steel sheets, 10 to 14, $2.25@$2.35; iron sheets, 10 to 14, $2.20@$2.30; tank steel, $1.90@$2; shell iron or steel, $2.50@$2.75; firebox steel, $4.25@$5.25; flange steel, $2.74@$3; boiler rivets, $4@$4.15; boiler tubes, all sizes, 65%.

Merchant Steel.—Further contracts for large lots of soft steel bars and special shapes are reported, but specifications are lacking, and if consumers in the implement trades do not commence ordering at once there will be danger of a steel famine during the winter and early spring months. A year ago requisitions of sizes required were numerous. Quotations are: Tool steel, 6·50@6·75c. and upward; tire steel, 1·85@1·90c.; toe calks, 2·20@2·30c.; Bessemer machinery, 2·05@2·15c.; Bessemer bars, 1·70@1·80c.; open hearth machinery, 2·10c.; open hearth carriage spring, 2·10@2·20c.; crucible spring, 3·50@3·75c.

Galvanized Sheet Iron.—Consumers are placing orders and taking material more freely from warehouse, and the outlook for increased business next month is good. Discounts are unchanged at 70, 10 and 5% off on Juniata and 70, 10 and 10% off on charcoal, and jobbing quantities at 70 and 7½% off on the former and 70 and 10% off on the latter.

Black Sheet Iron.—Nothing doing in light sheets from mill and very little for heavy. No. 27 common is quoted at 2·75c. Chicago; jobbing price is 2·95@3c. for iron, and steel sheets are about 10c. higher per 100 lbs.

Bar Iron.—There is a moderate amount of iron selling, and mills in this vicinity are securing the bulk of the business offering at 1·45c. here, or 50c. to 75c. a ton less according to specification. The mills of the Calumet Iron and Steel Company started up to-day to fill orders on material for delivery next month (October). Warehouse demand for iron and steel is very fair at 1·65@1·75c. respectively.

Nails.—Wire nails, notwithstanding the improved demand, are weaker, and mill lots are quoted at $1.40@$1.42 Chicago. Jobbers report a fair demand in small quantities at $1.50 from stock. Steel cut nails are also in better demand from mill at $1.20, and $1.30@$1.35 from warehouse,

Billets and Rods.—Nothing doing in billets. A sale of 300 tons of steel rods from stock is reported at $27.50.

Steel Rails.—The steel company here have an inquiry for a round tonnage of light sections, and also report a little better inquiry for standard weights at $30@$31.

Scrap.—Some inquiry is noted, but buyers and sellers are too far apart in their views as to values. Little or nothing doing. Prices are merely nominal. Railroad, $11.00; No. 1 forge, $11.00; No. 1 mill, $7.50; fish plates, $12.00; cast borings, $4,50; wrought turnings, $7.50; axle turnings, $7.25; machinery castings, $9; stove plates, $6.50; mixed steel, $8; coil steel, $14; leaf steel, $14; tires, $13.50.

Old Material.—Consumers of iron rails are apparently well supplied as there is no demand for immediate delivery. Several holders are waiting for $16 and buyers offer $14 or less. Steel rails are stagnant at $9@$11 according to length, etc. Dealers offer $9 for car wheels, but sellers want $14.

Philadelphia. Sept. 28.

(From our Special Correspondent.)

Pig Iron.—Buyers of foundry iron have been canvassing the brokers since Monday, trying to get fine brands of iron at low brand prices. Very little iron has sold, as yet; brokers are not in position to refuse business, but think the recent concessions all that they can stand. The founders are somewhat indifferent and a number of them have bought small lots to last them until the brokers can have time to think. There is no disposition this week to purchase for winter requirements. Last week it looked as though there would be a good deal done in the way of anticipating winter requirements; but the trouble is, the large stocks and the probability that sacrifices will have to be made by holders of iron. Quotations for standard No. 1 are $14.50; No. 2, $13.50; forge, $12@$12.50. The bar mills have so little business ahead that the owners cannot be induced to buy much iron.

Muck Bars.—Muck bars have been quoted at $22.50 to inquirers, but there are no sales to report.

Steel Billets.—Buyers have been offered billets at $21, but even this figure does not close much business; $21.50 to $22 is the asking price. One or two brokers say that large transactions in billets cannot be postponed much longer and that Eastern billets will probably be shaded 25c. to 50c. from present prices.

Merchant Iron.—The merchant bar mills are not turning out more than half what the capacity would allow. The situation is disappointing; brokers and salesmen are doing their best. Storekeepers have all the iron piled up that they want. The car builders are not buying Wagon and carriage makers are idle. In this condition of things there is nothing to do, but make only what iron is ordered. Quotations for small lots, 1·50@1·60.

Nails.—The building season is near the end, and the storekeepers report a falling off in demand. Factory production will probably be reduced.

Skelp Iron.—The skelp mills are all busy on the large orders placed some time ago. The manufacturers think that there will be a good deal of trolley line construction done this winter; and that they will have orders enough out of this new work to keep them busy on a basis not far from $1.50.

Wrought Pipes and Tubes.—The wrought iron pipe makers are not booking orders, excepting once in a while, worth reporting. An occasional order comes to hand, which shows that a little work calling for large pipe is under way.

Sheet Iron.—The dulness at the sheet mills continues, and, unless there is an improvement, one or two mills may shut down for a while. There is not much in sheets, but the manufacturers have nothing to do but stop if they do not like to run at figures which would barely pay repairing.

Merchant Steel.—Just now there is an active demand for tool steel, on account of the exhaustion of stocks among quite a number of small concerns. Considerable shipments have been made to New England, and there is a better demand in sight from that quarter.

Plate and Tank.—Nearly all the plate mills manage to keep going, but the brokers and agents here in town certainly do not send all the business that keeps them going, for their accounts are gloomy. They add, however, that there is enough talked of and projected business to keep all the mills running (were the orders placed) on full time and at fair margins. Plates have been sold as low as $1 60, and it is understood that the mill men are quite anxious to take business at that figure.

Structural Material.—The large Bourse contract has been placed, and Allen B. Rourke, of this city, is the general contractor. The Edgemoor Bridge Company has the contract for the iron and steel work. This is the cheapest contract that has ever been let in this city. The business outside of this has not been very heavy, and there is no use in going over the well-known quotations, which there is no inducement to shade on the small orders that are coming in.

Steel Rails.—A number of good sized rail orders, or inquiries for rails, are said to be on the market; but the railmakers have no knowledge of any big contracts placed as yet. They do not admit that anything less than $29 has been quoted, but parties

in the interests of buyers think that figure will have to be shaded.

Pittsburg. Sept. 27.

(From our Special Correspondent.)

Iron and Steel.—The competition for business seems to grow more intense in the iron trade, and, on any contract of size, there are many bidders at exceedingly low prices. While quorations have not receded for small lots, and indeed are not badly cut on large orders, the tone of the market is not strong, and further reductions seem possible as soon as a lower level of wages is established and cost reduced in other particulars. The burden of competition has passed beyond the manufacturers, who are selling in most cases at cost, and now rests upon the workman. In all departments buyers are acting cautiously, taking what they actually require to complete contracts on hand. Since our last issue several mills have started up, very much to the delight of many idle men.

Workmen generally have had a severe time since the mills closed the last of June. The manufacturers have largely felt the effects of hard times and the scarcity of money. Considerable dissatisfaction is felt with the delay policy at Washington.

Before long the additional mills that are being fired up will require raw material, and, as the production is falling off very materially, it certainly looks as if prices would soon be on the up grade. The present year to date has been one of the most eventful ever experienced in the iron and steel trade. Notwithstanding the fact that prices are by far the lowest in the history of the trade, mill owners who are in operation seem determined to keep them going on some terms, hence the continuous melting away in values.

Scrap material of all kinds continues very dull, but, some of the mills having started up, an improvement is looked for in the near future; in the absence of sales prices are nominal.

Steel Wire Rods.—Five-gauge American, prices nominal; held at $26@$29 at makers' mill.

Wire nails quiet; for the season, current rates, $135, 60 days; 2% off for cash.

Wrought Iron Pipe.—The demand is improving; business, however, continues light. Some of the mills have been idle since June.

Finished Material.—There is an increasing demand from the fact that additional mills are being started up.

Coke & melted Lake and Native Ore.	
Tons.	Cash.
1,000 Bessemer, Oct., Nov.	$12.25
1,000 Bessemer, Oct., Nov.	12.30
1,000 Bessemer, Oct., Nov.	12.35
500 Bessemer, Oct., Nov.	12.35
1,000 Gray Forge, Oct., Nov.	11.30
500 Gray Forge, Oct.	11.50
500 Gray Forge, Oct.	11.50
100 Mill, Oct.	11 50
100 Mill, Oct.	11.50
60 Mill, prompt.	11.50
200 No. 2 Foundry	12.50
200 No. 2 Foundry	12.50
100 No. 1 Foundry	13.50
100 No. 2 Foundry	13.50
25 No. 1 Foundry	13.50
25 No. 2 Foundry	12.50
Charcoal.	
100 Foundry.	17.50
100 Mill	15.00
50 Cold Blast	26.50
50 No. 2 Foundry	18.00
Blooms, Billets and Slabs.	
Tons.	Cash.
1,500 Billets, 500 tons, Oct., Nov., Dec., at mill	$18.75
1,500 Billets, Oct., Nov., at mill	19.65
1,300 Billets, Oct. to Dec., at mill	19.80
1,000 Billets, Oct. to Dec., at Wheeling mill	20.00
1,000 Billets, and Slabs, Nov., Dec., at mill	20.00
800 Billets, Sept., Oct., at mill	19.65
700 Slabs, Oct., Nov., at mill	19 75
700 Billets, Oct., Nov., at mill	19.75
500 Billets, prompt, at mill	19.50
500 Billets, Sept., Oct., at mill	19.80
Muck Bar.	
300 Neutral	21.60
200 Neutral	21.50
200 Neutral	21.50
Skelp Iron.	
1,000 Sheared	1·55 4 m
700 Wide Grooved,	1·37½ 4 m
500 Narrow Grooved,	1·37½ 4 m
Skelp Steel.	
400 Wide Grooved	1.30 4 m
Sheet Bars.	
Tons, at mill	Cash. $25. 0

METAL MARKET.

NEW YORK, Friday Evening, Sept. 29, 1893.

Prices of Silver per Ounce Troy.

Sept.	St. Ex.	London Pence.	N.Y. Cts.	Value of sil. in $1.	Sept.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in $1.
23	4·85¼	33⅞	73½	·569	27	4·86⅛	34⅛	74	·573
25	4·85⅛	33⅞	73½	·569	28	4·86¼	34⅛	74	·573
26	4·86⅛	34⅛	73⅞	·572	29	4·86	34⅛	74	·573

There are no new developments in the situation. The impression that repeal will be the final outcome of the present deadlock in the Senate is stoutly maintained. Meantime silver operations are made from hand to mouth. The foreign demand for prompt shipment is not so active, and smaller amounts are being solicited for the East.

The United States Assay office at New York reports the total receipts of silver for the week to be 97,000 ounces.

Gold and Silver Exports and Imports at New York, Week Ending September 23d, 1893, and for Years from January 1st, 1893, 1892.

	Gold.		Silver.		Excess of Imp. or Ex.
	Exports.	Imports.	Exports.	Imports.	
Week	$277 837	$1,299,396	$517,688	$33,038	I. $536,969
1893...	69,653,143	57,277,185	23,653,967	2,838,542	E 60,115,727
1892...	58,698,649	6,563,489	16,329,544	1,813,686	E 66,621,018

The gold exports of the week were all to Havana, while nearly all of the silver went to London. Of the week's gold imports $1,198,016 came from France, $20,196 from London, $1,000 from Hamburg and $81.641 from South America. The silver came from Mexico and the West Indies.

NOTES OF THE WEEK.

The financial situation, which had continued to be depressed on account of the delay in the Senate and the reports of a possible failure of the repeal bill to pass that body, which have been industriously circulated by the silver advocates, has not materially changed, although the President's letter, which is published in another column, has tended to improve it by showing that there is no probability of a compromise meeting with approval, and that the unconditional repeal will be strenuously insisted upon. The letter also seems to have helped somewhat to strengthen the majority in the Senate. No positive action has, however, yet been taken to put an end to the vagaries of the few men like Senator Stewart, who continue to talk to empty benches, and repeat again and again the statements a hundred times shown to be pure fictions.

One of the bad features of the present situation is the fact that gold exports are again becoming possible. There were rumors that some gold would be sent abroad this week, but they have not so far materialized.

The retirement of Clearing-House certificates in New York has continued, and the total amount outstanding to-day is $26,255,000.

The New York bank statement for last week showed increases of $7,008,250 in surplus reserve, $5,205,500 in specie, $3,471,100 in legal tenders, $6,673,400 in deposits, $886,700 in circulation, and a decrease of $735,200 in loans outstanding.

The San Francisco "Evening Bulletin" of latest mail date says: The silver shipments to China and Japan by the Hong Kong steamer yesterday amounted to over $500,000. This is the third steamer this mouth for Hong Kong, and all have taken large consignments of specie, as follows: September 2d, $552,031; September 12th, $448,441; September 21st, $503,461; total, $1,503,933. Another steamer will leave on the 30th. Nearly all the above was in the form of silver, mostly Mexican dollars. The low price of these coins is a great inducement to shippers, who buy them for 60c, and pass them in China and Japan for their full face value.

Thursday's statement of the United States Treasury showed a total of $112,749,530 in balances in excess of outstanding certificates. Of this there was in gold, $95,013,903; silver, $7,722,512; U. S. notes, $7,209,952; Treasury notes, etc., $2,803,463. The gold balance showed a decrease of $670,414 during the week. The silver dollars and bullion on hand in the United States Treasury under the act of July 14th, 1890, $151,221,182. Against this are outstanding in United States Treasury notes, in general circulation and in the Treasury, $151,139,280.

The latest 10 days' statement of the Treasury Department shows that the customs receipts at New York for the first 20 days of this month aggregated $5,597,571, or about $1,000,000 less than for the same period of last September. An encouraging feature, however, is that of this amount 60%, or about $3,400,000, was paid in gold, while last September not so much as 1% was paid in gold. This increase accounts for the figures at which the gold reserve remains.

The railroad statements, which are a sort of index to the general business condition, are not favorable, showing generally a decrease in earnings.

London dispatches say that the Bank of England reserve decreased £183,000 during the week, although £87,000 in gold was imported. The gold holdings of the bank now amount to £27,567,216, a decrease of almost exactly £100,000 from the corresponding date last year. The Bank of France reports during the week an increase of 4,000,000 francs in gold and 725,000 in silver.

The Hungarian Ministry of Finance, after some delay, has decided to recognize the state of the market, and has reduced the price of the silver from the State mines from 90 fl. to 57 fl. per kg. A similar decree is also to be issued in relation to the Austrian mines.

The London "Statist" of recent date says: There has been no further development in the curious state of the Eastern exchange market that has existed now since the Indian mints were closed. The Indian exchanges have, of late, shown more strength, but they still remain below the reduced figure of 1s. 3¼d. per rupee, which, for the time being, is the minimum rate of the India Council. The banks are still able to cover exchange on cheaper terms by purchases of merchants' bills, rupee paper, silver and gold, a better demand for the latter metal having sprung up during the past week. On Wednesday 40 lacs of bills were offered, and the Council succeeded in selling just a quarter of a lac. Twelve weeks, or rather twelve allotment days, have passed by since the Indian mints were closed, and the Council have, practically, been unable to sell their bills. Since the commencement of the financial year they have realized a little over £5,750,000 sterling, as compared with nearly £7,500,000 in the corresponding period of last year, and they ought to draw very much more freely this year than last if they are to realize the sterling amount estimated in the Budget. For 1892-93 the Budget estimate was £17,000,000 sterling and the amount realized was under £16,250,000. This year the Budget estimate is for £18,700,000—equal, at the present minimum of 1s. 3¼d. per rupee, to nearly 70 lacs per week—and, indeed, their drawings should be even larger to cover the deficit of about three-quarters of a million sterling in the drawings of 1892-93. On the basis of the Budget estimate of £18,700,000 the Council ought to have drawn over a million and a half per month, or, say, from the commencement of the current financial year, upward of £8,500,000 sterling. The shortage to date, therefore, not including the arrears of 1892-93, is about £2,750,000 sterling. It does not require much examination of these figures to see that the position of the India Council is becoming serious.

Washington dispatches say: Special Agent Ayer, from the sworn statement of manufacturers, has submitted a report to Secretary Carlisle, showing the production of black steel and iron plates, and of tin and terne plates for the fiscal year ended June 30th, 1893. The total of the former aggregated 63,581,541 lbs. and of the latter 99,819,202 lbs. The amount of American sheet iron and steel made into articles and wares, tinned or terne plates during the past fiscal year was 8,802,681 lbs. The quantity of tin and terne plate imported and entered for immediate consumption during the fiscal year aggregated 611,949,989 lbs. The quantity of the above plate on which duties were paid and which were used in the manufacture of articles exported with benefit of drawback was 128,863,227 lbs. The total consumption of tin and terne plate for the fiscal year was 720,000,000 lbs., of which 15% was of American manufacture. Figures are given to show that the product from American plates was about five-eighths of the amount necessary to enable manufacturers to meet the one-third requirement under the law, which provides that during any one year of the term of five years the domestic production of tin plate must equal one-third the importations during any one of such years, otherwise the duty on tin plate will be abolished.

Domestic and Foreign Coins.

The following are the latest market quotations for the leading foreign coins:

	Bid.	Asked.
Mexican dollars	$.59½	$.60
Peruvian soles and Chilian pesos	.52½	.54
Victoria sovereigns	4.84	4.88
Twenty francs	3.86	3.89
Twenty marks	4.74	4.78
Spanish 25 pesetas	4.75	4.80

Other Metals.

Copper.—The market has been lifeless, and confidence, which appeared to be slowly reviving, is again disappearing, pending the endless debate in the Senate regarding the repeal of the Sherman Silver Bill. Fortunately, there is not much pressure to sell, else we would have to report lower prices. As it is, values have eased off, and although the large Lake companies are still holding for 10c., second-hand lots are obtainable at about 9·85, perhaps even a trifle below. For export, there is no demand at present prices, and only at lower figures could sales be effected. We have to quote electrolytic copper nominally 9⅜@9¼, and casting copper at 9¼, but it is difficult to effect sales, and with actual bids, no doubt copper can be purchased somewhat lower.

Arizona pig copper, guaranteed 56%, is held above the market, viz., at 9⅛ to 9¼. Exports continue very heavy, but the deliveries for the home trade are very small indeed. The market for G. M. B.'s declined about £1 earlier in the week, but since then has been firm, and part of the decline has been made up, and the closing prices are £42 for spot and £42 7s. 6d. three months. For refined and manufactured we quote: English tough, £45@£45 10s.; best selected, £45 15s. @ £46; strong sheets, £52@£53; India sheets, £51 10s.@£52; yellow metal sheets, 4⅝d.

The exports of copper from the port of New York during the past week were as follows:

Copper :			
Rotterdam—Werkendam.	305 casks	381,250 lbs.	$40.700
" "	5,857 plates	355,011 "	34,610
" "	801 pigs	226,136 "	21,750
St. Petersburg—Galileo..	368 casks	448,000 "	43,800
" Buffalo..	180 casks	225,000 "	24,000
" "	436 cakes	225,755 "	22,250
" "	1,334 bars	225,721 "	21,450
Swansea—Exeter City...	7 6 bars	221,074 "	20,167
" Manhanset....	1,085 bars	336,770 "	30,309
Liverpool—Britannic....	40 casks	50,000 "	5.500
" "	163 cakes	25,146 "	2 700
" Nomadic....	3,963 ingots	75.000 "	8,000
" Bellova.....	405 casks	506,000 "	51,160
London—Mobile.....	1 cask	1,250 "	125
Hull—Buffalo....	180 casks	225,000 "	21,938
Hamburg—Dania.....	183 casks	250.883 "	22,862
" "	99 cakes	45,148 "	3.8.0
" "	117 bars	19.966 "	2,000
" Hungarian.....	36 casks	44,800 "	4,250
" "	161 bars	22,529 "	2,000
Havre—La Touraine.....	191 casks	238,750 "	25 200
" "	616 pigs	93,129 "	9,300
" "	435 plates	19,970 "	1.810
" Kong Frode....	1,719 cakes	350,658 "	35,066
Copper matte:			
Liverpool—Britannic....	1.067 bags	123,793 "	5.500
" Nomadic .. .	7,917 "	957.0.5 "	44.455
Swansea Manhansett...	94 casks	132,8.5 "	6.000
" " ...	2,392 bags	240,772 "	10,700

Tin.—Early in the week the price advanced to 20c., but at that figure larger quantities came out, and the market eased off somewhat, sales being made at 20·90 down to 20·75, and, in all, about 300 to 400 tons changed hands. After these parcels were out of the market bidding was again quite spirited, and nothing is to be had now below 21⅛ to 21¼. It is estimated that stocks are not above 3,000 tons now, and the time is fast approaching when importers will have to purchase in the foreign market. London declined in the middle of the week to £79 5s., but has picked up since, and the closing quotations are £80 for spot, and £80 5s. three months prompt. Shipments from the East during the last six weeks have been small.

Lead.—Little business is being transacted, but quotations are firmly held up. Reports have come from Idaho to the effect that some of the mines are again starting up, the miners having accepted lower wages. The supply from this quarter will be eagerly welcomed by all smelters. Production is evidently still very much curtailed, and any sudden demand will materially influence prices upward. We have to quote 3·72½@3·77½.

The foreign market is lower. Spanish lead in London is quoted at £9 11s. 3d.@£9 13s., and English 2s. 6d. higher.

St. Louis Lead Market.—The John Wahl Commission Company telegraph us as follows: Lead dull and gradually declining. Last sales are at $3.50, and even at that figure buyers do not seem to be at all interested.

Spelter.—There has been quite a good demand for nome trade, and prices are firm at $3.75@$3.80. In London the market is flat at £17 2s. 6d. for common and £17 5s. for specials.

Quicksilver.—This market continues quiet. Quotations are: New York, $38, London, £6 8s. 6d. The receipts of quicksilver at San Francisco, Cal., from January 1st to August 31st, 1893, aggregated about 16,200 flasks against 14,133 flasks for the corresponding period last year. The importations into London, Eng., from January 1st to August 31st were 50,175 flasks against 53,821 last year. The exports for the same period were 32,013 flasks this year, against 29,659 last year.

Antimony is quiet but steady. Cookson's, 10¼c.; L. X., 10c., and Hallett's, 9¼c.

Nickel is entirely lifeless, and no business has been reported for some time. Quotations are quite nominal.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Sept. 29.

Heavy Chemicals.—The conditions which at present prevail in this market are identical with those which were reported in our last week's review of the trade. There has been no change unless it be a slight advance and a greater firmness in the price of caustic soda, due to the continuance of the coal miners' strike in England, which has seriously inconvenienced chemical manufacturers there. In this market high prices have been asked for caustic soda in store here. There has been but little new business in any of the chemicals. Most of what was done consisted of deliveries on old contracts. There was no new feature whatever.

Quotations are unchanged nominally as follows: Caustic soda, 60%, 3·05@3·20c.; 70%, 2·80@3c.; 74%, 2·82½@3·05c.; 76%, 3@3·10c. Carbonated soda ash, 48%, 1·15@1·25c.; 58%, 1·10@1·20c. Alkali, 48%, $1.10@$1.20; 58%, $1.05@$1.15, according to package. Sal soda, English, 1·10c.; American, 1@1·10c. Bleaching powder, 2·25@2·50c.

Acids.—There is nothing new to report of this market. Business in general is quiet. There is a fair jobbing demand, and some sales for future delivery are reported. Prices are without marked change and we quote as follows: Acids, per 100 lbs. in New York and vicinity, in lots of 50 carboys or more: Acetic, in barrels, $1.87½; in carboys, $2.25; muriatic, 18°, 90c.@$1.10; 20°, $1@$1.25; 22°, $1.10@$1.35; nitric, 40°, $4; 42°, $4.50@$4.75; sulphuric, 75c.@$1. Mixed acids, according to mixture, oxalic, $6.30@$6.50. Blue vitriol is quoted all the way from $3.50 to $3.75; glycerine for nitroglycerine, 11½@12½c., according to quality and quantity.

Brimstone.—This market continues quiet, but prices are higher and firmer. There are no stocks on the spot and no inquiry for any. Quotations for October—November, steamers, are $18 for best unmixed seconds, and $16.75@17 for thirds.

Fertilizing Chemicals.—Business in fertilizers has undergone some improvement since our last report. There has been considerable activity in ammoniates, and sales, both for prompt and forward deliveries, have been made to Northern and Southern consumers. A good demand has sprung up, and as stocks in the West are light buyers who have hitherto been holding off are forced to pay the higher prices which now prevail in the ammoniate market.

Quotations are: Sulphate of ammonia, gas liquor, $3.30@$3.35; bone, $3.05. Dried blood, $2.20@$2.25 per unit for high grade, and $2.05@$2.10 for low grade; azotine, $2.15@$2.25. Concentrated phosphate (30% available phosphoric acid), 75c. per unit. Acid phosphate, 13% to 15%, av. P_2O_5 60c. per unit at seller's works in bulk. Dissolved bone-black, 17% to 18%. P_2O_5 92@95c. per unit. Acidulated fish scrap, no stocks on hand; dried scrap is quoted at $25 f. o. b. fish factory; wet scrap, $15 f. o. b. fish factory. Tankage, high grade, $24.50@$25.50; low grade, $22@$23. Bone tankage, $23@$24; bone meal, $24@$25.50.

The price of double manure salts as fixed by the syndicate is as follows: New York and Boston, $1.12; Philadelphia, $1.14½; Charleston and Savannah, $1.17 cwt., basis 48@50%, in 50-ton lots on foreign weights and analyses. Sulphate of potash, 90%-96%, basis 90%: New York and Boston, $2.07; Philadelphia, $2.09½; Charleston and Savannah, $2.12?, sulphate of potash, 96-99%, basis 90%, is 4% higher.

Phosphates.—Owing to the curtailment in the output, to which we alluded in our last issue, prices of high grade phosphate rock are higher. Quotations f. o. b. Charleston are $5@$5.50. Freights are $2.25.

Muriate of Potash.—No new business is reported in this market. The prices fixed by the syndicate for 1893 are as follows: New York or Boston, $1.78; Philadelphia, $1.80½; Southern ports, $1.83. During the past week there were no arrivals.

Kainit.—Practically nothing is doing in kainit. Quotations for shipments are as follows: New York, Philadelphia and Boston, $9 for foreign invoice weight and test, and $9.25 for actual weight; Charleston, Savannah and Wilmington, $9.75 for invoice weight and test, and $10 for actual weight.

Nitrate of Soda.—There is no change to report of nitrate, either as to general business or as to prices. We quote spot at $1.70@$1.72½, and forward deliveries at $1.80@$1.85.

Liverpool. Sept. 19.

(Special Correspondence of Joseph P. Brunner & Co.)

The coal strike continues to drag along, and in consequence of scarcity of fuel the production of chemicals is still further curtailed. The Alkali Company have notified their customers that in consequence of the stoppage of their works on account of want of fuel, they will not be able to make any further deliveries on contracts until the coal strike is ended. With the exception of chlorate of potash the Alkali Company's plant generally is idle.

Soda ash shows no improvement, the demand being still poor. For Leblanc makes quotations are unreliable, varying according to quantity, make, market, etc. The quotations are quite nominal, as follows, viz.: Caustic ash, 48%, £4 10s.@£5 per ton; 57%, 58%, £5 10s.@£5 15s. per ton. Carbonate ash, 48%, £4 15s.@£5 per ton; 58%, £5 5s.@£5 15s. per ton, net cash.

Ammonia ash, 58%, is without a special feature and quiet at £4@£4 5s. per ton, less 2½%, for prompt delivery.

Soda crystals are still maintained at £3 5s.@£3 7s. 6d. per ton, less 5%.

Caustic Soda.—At the end of last week the Alkali Company advanced prices all round on the basis of £10 15s. per ton, net cash. for 70%, with other strengths in proportion. Since then they have withdrawn from the market altogether, as their stocks at the works are practically exhausted, and on this account caustic soda may now be said to be almost unobtainable. Bleaching powder, although scarce, is dull at £9@£9 5s. per ton, net cash, for hardwood packages. With the stoppage at the works, however, and reduction of stocks, it is quite possible that the price of this article may have to be advanced.

Chlorate of potash is scarce, but at the same time there is no active demand. We quote: Prompt, 8⅝d. @8¾d. per lb; September, 8½d.@8¾d.; October, 8¼d.@8½d., and October-December, 8d.@8¼d. per lb. less 5%.

Bicarb. soda in fair request and steady at £7 per ton less 2½% for 1 cwt. kegs, with usual allowances for larger packages.

Sulphate of ammonia is dull, and nominal spot quotations are about £14 15s.@£14 17s. 6d. per ton, less 2½% for good gray, 24@25%, in double bags f. o. b. here.

Nitrate of soda is quiet but steady at £9 10s. per ton, less 2½% for double bags f. o. b. here, but there is not much moving.

Carb. Ammonia.—Lump 3½d. per lb.; powdered 3¾d. per lb. less 2½%.

MINING STOCKS.

[For complete quotations of shares listed in New York, Boston, San Francisco, Aspen, Colo.; Baltimore, Pittsburg, St. Louis, London and Paris, see pages 360, 361 and 362.]

NEW YORK, Friday Evening, Sept. 29.

Nothing of interest has occurred during the past week in the mining stock market. Sales have been small as well as few and far between. Toward the end of the week business has been practically *nil*, although we hear that some sales have taken place which do not appear in the official lists of exchanges. It is assuredly unreasonable to expect much activity in mining stocks in these days of widespread financial depression. The public has not yet fully regained its confidence in stocks of any kind, and much less in those of mining companies. Nothing is being done by the committee on mining securities to ameliorate the condition of the mining market for the reason that nothing can be done.

The Comstocks have been neglected. The only transactions this week were 250 shares of Best & Belcher at 60c.; 100 shares of Mexican at 60c.; 100 shares of Hale & Norcross at 45c., and 100 shares of Ophir at 85c.

Leadville Consolidated seems to be in fair demand; during the week 1,500 shares were sold at 11c.

Phoenix of Arizona shows some activity; total transactions for the week aggregated 2,100 shares (reorganization certificates) at 43@50c.

Brunswick Consolidated was stationary at 2c.; sales for the week amounted to 2,400 shares.

The annual meeting of the Horn Silver Mining Company will be held in Salt Lake City, Utah, on October 3d.

NOTES OF THE WEEK.

San Juan.—This Colorado district is still very quiet. Of 440 tons shipped from Telluride during the week 407 were furnished by the Smuggler Union combination.

The sale is reported of the gold mine of El Bote in Zacatecas, Mex., to parties from Richmond, Ind., who will develop the mine and build a mill. Prospecting for gold mines is going on all over the Sierra Madre.

At the delinquent sale of the Exchequer Mining Company held in San Francisco, September 21st, about 65,000 out of 100,000 shares of the capital stock were forfeited by holders and bought in by the company for non-payment of the assessment.

Late advices from the Wood River district, Idaho, say that the upward tendency of lead has caused some activity among the mines, and that several have increased their working force and consequently the shipments of ore to the smelters.

At a special meeting of the directors of the Bulwer Consolidated Mining Company, held in San Francisco, September 22d, the delinquent sale of the pending assessment, which was to have been held on that date, was postponed to October 9th.

The Amador Gold Mine has levied assessment No. 1 of 5c. per share, payable immediately at the office of the company, 330 Pine street, San Francisco, Cal., or to H. R. Lounsbery, 57 Broadway, New York City. The stock will be delinquent on October 12th, and will be offered for sale on November 7th.

Harqua Hala Gold Mining Company, Limited, Arizona.—During the month of August the mill worked 18½ days (being shut down 11 days for repairs to boilers), and crushed 1,875 tons of ore. The gross value of gold produced was $25,000. The estimated total expenses were $7,000.

Assessments on stocks of mining companies announced during the past week are: Amador Gold Mine, California, 5c. per share; Bahama Mining Company, South Dakota, 1½ mills per share; Crescent Mining Company, Utah, 3c. per share; Richland Mining Company, South Dakota, 1½ mills per share.

Bulwer Consolidated Mining Company, California.—The latest weekly official letter says: We are stoping out above No. 1 cross-cut 200 level. Winze 2, below 200 level, was extended 10 ft. The mill was kept running steadily and crushed during the week 138 tons of ore, average battery sample $20.38, tailings, $8.08.

The Polaris Mining and Milling Company, of Beaverhead County, Mont., has resumed work on its tunnel after a short suspension of operations. One of the directors has lately returned to this city from the company's property and expresses himself as well pleased with the condition of the mine. The tunnel is now in over 1,100 feet.

California Hydraulic Mining.—The California Miners' Association will meet in San Francisco, October 9th. The proceedings will include discussion of Suggestions for the Amendment of the Camtinett bill to regulate hydraulic mining and a petition to Congress for Federal aid in building impounding dams for tailings.

Leadville, Colo.—Of six smelting plants at work March 1st there is now only one, the Bimetallic, in operation. The Bimetallic has nearly run through its stock of ore and is preparing to shut down.

The mines in which David Moffat is interested have partially resumed, as the result of the acceptance by the miners of a sliding scale of wages, to be ruled by the market price of silver.

Lehigh & Wilkes-Barre Coal Company.—An explosion of gas took place in the Lance Colliery, No. 11, of this company, near Plymouth, on the evening of September 22d, by which five men were instantly killed and five others badly hurt. The accident, it is said, was caused by a careless miner entering a chamber filled with gas while carrying a naked lamp. The men injured were working nearly 1,000 f.. away, but there was much gas in the mine, and the flame spread so quickly that they had no time to escape. The damage to the mine is considerable.

The Philadelphia & Reading Company on October 1st will be 90 days in default on the coupons of the general mortgage bonds, and it will then be possible, under the terms of the mortgage, to begin foreclosure proceedings. On September 27th a conference was held in Philadelphia between officers of the company and representatives of some of the large holders of the bonds in New York. It is understood that the New York party presented the outlines of a new plan of reorganization; but nothing has been made public as to the nature or terms of the new plan.

Brunswick Consolidated Gold Mining Company.—Superintendent W. A. Hawley writes under date of September 21st: Work at the mine is being continued steadily. In the 700-ft. drift the ledge is from 10 to 12 ins. wide showing free gold and a large amount of sulphurets. I estimate it to be worth from $10 to $12 per ton. The drift has shown the same quality of ore for the last 35 ft., and is now in 130 ft. It will take about three months to open out sufficient ground on the present level to enable us to commence stoping, and then, in my opinion, we will be able to pay our own way, providing the ore continues to show as good in quantity and quality as at present. The drift has been extended 7 ft. during the past week. On the 700 level an upraise has been started 100 ft. west from the shaft. This is intended to connect the 600 and 700 levels, to ventilate the mine and also to prospect a chute of ore in the bottom of the 600 ft. level. The raise is now up 40 ft.

A late issue of the Virginia City "Chronicle" says: There are some points on the Comstock where ore of more than the average value is being extracted and which are considered good prospects. The winze, 20 odd feet down from the 1,300 level of the Hale & Norcross, persists in showing good ore, although it is some time since the ore was opened up and somewhere between 40 and 50 carloads of ore, averaging, according to car samples, $35 per ton, have been mined. The bottom of this winze is an interesting spot that may speak for itself in the immediate future. Work to the eastward was started there recently for the purpose of putting in square sets, and the important developments may follow at any time. Forty-dollar ore is being extracted from the west ledge above the 400 level of the Occidental. The value of this ore is all right; all that is needed is enough of it. Three hundred and forty eight tons of ore, averaging per battery sample $19.91 per ton, were milled last week at the Nevada mill for the Potosi mine, and 210 tons, averaging per battery sample $22.50, were milled for the Savage. The Savage shipped 7,400 lbs. of crude bullion to the Mint at Carson. The Consolidated California & Virginia had $13,000 on hand at the close of the week. The Kentuck shipped gold bullion to the Mint to the value of $3,239. This constitutes the production of the Comstock for the past week, and, if nothing else, shows that there is still ore in the mines, and that there are still possibilities for the discovery of a large body.

Boston.

Sept. 28.

(From our Special Correspondent.)

The market this week has been only fairly active with a tendency to lower prices, although early in the week they were quite strong, but the lower quotations for copper abroad caused a decline, from which there was only a fractional recovery.

Calumet & Hecla is the strongest stock on the list, selling up to $280, and is in good demand, some large lots being taken at that price.

Tamarack was weak for no special reason except a lack of buying orders, and declined from $144 to $135 with recovery to-day to $137. The mine is now sending to the mill over 1,500 tons of rock per day, which will greatly increase the income.

Osceola lost the advance of last week, selling off from $27¼ to $26¼. The product for September ought to be large, as great quantities of mass copper have been sent to the smelting works this month. Quincy declined from $110 to $105—one share selling at $100½. We hear no reason offered for the decline.

The Montana stocks have shared in the general tendency and record lower prices. Boston & Montana sold down from $22⅝, the highest price for the week, to $20⅝, with recovery to-day to $21. Considerable stock came out on the decline.

Butte & Boston was also heavy and declined to $7¼, a loss of $1 per share from the highest price of the week.

Centennial advanced early in the week to $2⅜, but lost the fraction in the final dealings. Franklin declined from $11¼ to $10¼ for small lots.

Kearsarge also lost $1 per share with sales in a small way at $6.

Tamarack, Jr., held its price quite well, selling at $17⅝ and closing at $17¼. The mine is shipping an average of over 150 tons of vein rock to the mill for stamping.

Wolverine declined from $2 to $1⅝ for 200 shares. It is stated that the mine is looking well and can turn out copper at less than 10c. cost.

There were no sales of Atlantic this week, and the balance of the list is neglected.

San Francisco.

SAN FRANCISCO, Sept. 29 *By Telegraph*.—The opening quotations to-day are as follows: Best & Belcher, 45c.; Bodie, 15c.; Belle Isle, 5c.; Bulwer, 10c.; Challar, 20c.; Consolidated California & Virginia, $1.25; Gould & Curry, 15c.; Hale & Norcross, 35c.; Mexican, 50c.; North Belle Isle, 10c.; Ophir, 75c.; Savage, 25c.; Sierra Nevada, 35c.; Union Consolidated, 25c.; Yellow Jacket, 40c.

DIVIDENDS.

Boston & Colorado Smelting Company, dividend of 2½%, payable October 2d at the office of the company in Denver, Colo.

Napa Consolidated Quicksilver Mining Company, dividend No. 56 of 10 cents per share, $10,000, payable October 2d, at the office of the company, No. 70 Kibby street, Boston, Mass.

MEETINGS.

Eureka Consolidated Mining Company, at the office of the company, Nos. 134 and 136 Market street, San Francisco, Cal., October 16th, at 11 A. M.

CURRENT PRICES.

These quotations are for wholesale lots in New York unless otherwise specified.

Acid—Acetic, chem. pure.....17@.19
Commercial, in bbls. and cbys...01¾@.02
Carbonic, liquefied, ℔ lb.....18@.25
Chromic, chem. pure, ℔ lb.....1.00
for batteries.....40
Hydrobromic, dilute, U. S. P.....25@.30
Hydrocyanic, U. S. P.....45@.50
Hydrofluoric.....20@.30
Alcohol—95%, ℔ gall.....$2.30@$2.40
Absolute.....$3.80
Ammoniated.....$2.80
Alum—Lump, ℔ cwt.....$1.75@$1.85
Ground, ℔ cwt.....$1.85@$1.90
Powdered, ℔ lb.....04½@.05
Lump ℔ ton, Liverpool.....£5
Aluminum Chloride—Pure, ℔ lb.$1.25
Amalgamating solution, ℔ lb.....60
Sulphate, ℔ cwt.....$1.90@$2.50
Ammonia—Sal., in bbl. lots, ℔ lb.....07½@.08
Carbonate, ℔ lb., English and German, 07½@.08
Muriate, white, in bbls., ℔ lb.....08¼
Aqua Ammonia—(in cbys) 3° ℔ lb.03@.04
20°, ℔ lb.....04@.05
26°, ℔ lb.....04¾@.05
Antimony—Oxymur, ℔ lb.....04@.06
Regulus, ℔ lb.....10@.11¼
Argols—Red, powdered, ℔ lb.....15
Arsenic—White, powdered ℔ lb.03@.03¾
Red ℔ lb.....065@.07
Yellow.....08@.09
White at Plymouth, ℔ ton.....£12 2 6
Asbestos—Canadian, ℔ ton.....$50@$300
Italian, ℔ ton, c. i. f. L'pool.....£18@£60
Ashes—Pot, 1st sorts, ℔ lb.....4.75@5
Pearl.....05¾@.06¼
Asphaltum—
Prime Cuban, ℔ lb.....04@.05
Hard Cuban, ℔ ton.....$28.00@$30.00
Trinidad, refined, ℔ ton.....$30.00@$35.00
Egyptian and Syrian, ℔ lb.....05@.07½
Californian, at mine, ℔ ton$12.00@$26.00
at San Francisco, ℔ ton.$15.00@$29.00
Barium—Carbonate, pure, ℔ lb.....45
Carbonate, commercial, ℔ lb.....05@.10
Chlorate, crystal, ℔ lb.....75
Chloride, commercial, ℔ lb.....05@.10
pure, ℔ lb.....16
Iodide, ℔ oz.....40
Nitrate, ℔ lb.....06¼@.07
Sulph., Am. prime white, ℔ ton$17.50@$19
Sulph., foreign, floated, ℔ ton.....$21@$24
Sulph., off color, ℔ ton.....$11.50@$15.00
Carb., lump, f. o. b. L'pool, ℔ ton.....£6
No. 1, Casks, Runcorn, " " .. £4 10 0
No. 2, bags, Runcorn, " " .. £3 15 0
Bauxite—℔ ton.....$10.00
Bichromate of Potash—Scotch, ℔ lb.....11@.12
American, ℔ lb.....11@.12
Bichromate of Soda—℔ lb..09¼@.10
Borax—Refined, ℔ lb., in car lots.08@.09
San Francisco.....08@.08½
Concentrated, in car lots.....07¼@.08
Refined, Liverpool ℔ ton £9
Bromine—℔ lb.....25@.35
Cadmium Minion—℔ lb.....$2.00
Cadmium Iodide—℔ lb.....$5.50
Chalk—℔ ton.....$1.50@$2.25
Precipitated, ℔ lb.....04@.06
China Clay—English, ℔ ton..$13@$18.00
Domestic, ℔ ton.....$9@$11
Chlorine Water—℔ lb.....10
Chrome Yellow—℔ lb.....10@.25
Chrome Iron Ore—℔ ton, San Francisco.....$10.00
Chromalum—Pure, ℔ lb.....35@.40
Commercial, ℔ lb.....02½
Cobalt—Oxide, ℔ lb.....$1.60@$1.70
Copper—Sulph. English Wks.ton£20@£21
Vitriol (blue), ordinary, ℔ lb. 03¾@.03¾
" extra.....04½
Nitrate, ℔ lb.....40
Copperas—Common, ℔ 100 lbs..85@.95
Best, ℔ 100 lbs.....$1.35@$1.50
Liverpool, ℔ ton, in casks....£2@£2 10s.
Corundum—Powdered, ℔ lb..04½@.09
Flour, ℔ lb.....03
Cryolite—Pow., ℔ lb., bbl. lots....07@.08
Emery—Grain, ℔ lb. (℔ kg.)....04½@.05
Flour ℔ lb.....02½@.04
Epsom Salt—℔ lb.....01@.01½
Feldspar—Ground, ℔ ton..$6.00@$10.00
Crude.....$2.00@$3.00
Fluorspar—Powdrd, No. 1, ℔ ton.$20@$30
Lump, at mine.....$6@$8
French Chalk—
Fuller's Earth—Lump, ℔ ton, $16@$20
Glauber's Salt—in bbls., ℔ lb...01@.01¼
Glass—Ground, ℔ lb.....09@.10
Gold—Chloride, pure, crystals, ℔ oz. $12.00
pure, 15 gr., c. v., ℔ doz. $5.40
liquid, 15 gr., g. s. v., ℔ doz.....$5.50
Chloride and sodium, ℔ oz.....$6.00
15 gr., c. v., ℔ doz. $2.75
Oxide, ℔ oz.....$27.25
Gypsum—Calcined, ℔ bbl.. $1.25@$1.50
Land Plaster.....
Iodine—Resublimed, ℔ oz.....30@ 33
Iridium—Oxide ℔ lb.....$90
Iron—Nitrate, 40°, ℔ lb.....01@.01¼
47°, ℔ lb.....02@.02½
Kaolin—*See China Clay.*
Kieserite—℔ ton.....$9@$10
Lead—Red, American, ℔ lb ...06¾@.07¼
White, American, in oil, ℔ lb..06¾@.07¼
White, English, ℔ lb., in oil..06¾@.08¾
Acetate, or sugar of, white....06@.06¼
Granulated.....
Nitrate.....09@.12
Lime Acetate—Am. Brown.....90@.95
" Gray.$1.75@$1.87½
Litharge—Powdered, ℔ lb..05½@.07¼
English flake. ℔ lb.....06@.09½
Magnesite—Crude, ℔ ton of 1,015 kilos.....$14.75
Calcined, ℔ ton of 2,240 lbs.....$22.00
Brick, ℔ ton of 2,240 lbs.....$47.50
Manganese—Ore, per unit.....23@.28
Oxide, ground, ℔ lb.....02½@.06¼
Mercuric Chloride—(*Corrosive Sublimate*) ℔ lb.....62@.64
Powdered, ℔ lb.....
Marble Dust—℔ bbl.....$1.25@$1.50
Metallic Paint—Brown ℔ ton. $20@$25
Red.....$20@$25
Mica—In sheets according to size, 1st quality, ℔ lb.....25@$6.00
Mineral Wool—Ordinary slag...01¼
Ordinary rock.....02¼
Ground, ℔ ton.....
Naphtha—Black.....
Nitre Cake—℔ ton.....$10.00
Ochre—Rochelle, ℔ lb.....01¼@01¾
Washed Nat Oxf'rd, Lump, ℔ lb.06¾@.06¾
Washed Nat Oxf'rd, Powder, ℔ lb.07@.07½
Golden, ℔ lb.....03@.05
Domestic, ℔ ton.....$12@$20
Oils, Mineral—
Cylinder, light filtered, ℔ gal...14@.16
Dark filtered, ℔ gal....10@.13
Extra cold test, ℔ gal. .20@.24
Dark steam refined, ℔ gal. .07½@.12
Phosphorus—℔ lb.....50@.55
Precip., red, ℔ lb.....80@.85
white, ℔ lb.....85@.90
Platinic Chloride—Dry, ℔ oz.....$7
Plumbago—Ceylon, ℔ lb.....04@.05
American, ℔ lb.....05@ 07
Potassium—Cyanide, ℔ lb., C. P. 65%, ℔ lb.....50
mining...28@.35
Bromide, domestic, ℔ lb.....28@.32
Chlorate, English, ℔ lb.....18@.18¼
Chlorate, powdered, English, ℔ lb. .18½@.19
Carbonate, ℔ lb., by casks, 82% .04½@.05
Caustic, ℔ lb., pure slick.....05½@.06
Iodide, ℔ lb.....$2.58@$2.80
Nitrate, refined, ℔ lb.....06@.08
Bichromate, ℔ lb.....10@.11¼
Yellow Prussiate, ℔ lb.....21½@.22½
Red Prussiate, ℔ lb.....39@.40
Pumice Stone—Select lumps, ℔ lb.03½@.15
Original cks., ℔ lb.....01¼@.02
Powdered, pure, ℔ lb.....01¼@.01¾
Pyrites—Non-cupreous, p. units. 10@.11
Quartz—Ground, ℔ ton.....$6.00@$10.00
Rotten Stone, Powdered, ℔ lb.03¼@.03¾
Lump, ℔ lb.....06@.07
Original cks, ℔ lb.....04½@.05½
Rubbing stone, ℔ lb.....03½@.04
Sal Ammoniac—lump, in bbls., ℔ lb.80½
Salt—Liverpool, ground, ℔ sack.....70
Domestic, fine, ℔ ton.....$7@$7.50
Common, fine, ℔ ton.....$4.50@$5
Turk's Island, ℔ bush.....26@.28
Salt Cake—℔ ton.....$10.00@$15.00
Saltpeter—Crude, ℔ lb.....03¼@.04
Soapstone—Ground, ℔ ton.....$8@$
Block and slab according to size.
Sodium—Prussiate, ℔ lb.....22@.24
Phosphate, ℔ lb.....04@.05
Stannate, ℔ lb.....06@.12
Tungstate, ℔ lb.....30@.35
Hyposulphite, ℔ cwt., in casks $1.70@$1.80
Strontium—Nitrate, ℔ lb.....08½@.06
Sulphur—Roll, ℔ lb.....01¼@.02¼
Flour, ℔ lb.....01¾@.02
Sylvinit, 27@35%, S.O.P., per unit, 3.75
Talc—Ground French, ℔ lb....01¼@.01¾
American No. 1, ℔ lb.....01¼@.01¾
American No. 2.....06
Terra Alba—French, ℔ lb.....65@.80
English, ℔ lb.....65@.80
American, No. 1, ℔ lb.....60@.80
American, No. 2, ℔ lb.....40@.50
Tin—Crystals, in kegs or bbls....14@.15
feathered or flossed. .20
Muriate, single.....07@.12
Double or strong, 54° B.....10@.15
Oxymur, or nitro.....13
Vermilion—Imp., English, ℔ lb. .80
Am. quicksilver, bulk.....57 @.59
Am. quicksilver, bags.....58 @.60
Chinese.....85 @$1.00
Trieste.....90 @ .95
American.....11½@ .12
Zinc White—Am., Dry, ℔ lb..04½@.05
Antwerp, Red Seal, ℔ lb.....06¼@.07
Paris, Red Seal, ℔ lb.....07½@.08
Muriate solution.....06
Sulphate crystals, in bbls., ℔ lb.03@.03¾

THE RARER METALS.

The prices given below are the prices at works in Germany, and are per gramme except where otherwise stated:

Arsenic (metallic), per kilo.....$0.25
Barium (ex amalgam).....2.12
" (per electrol.).....7.75
Bismuth (metallic), per kilo.....6.25
Cadmium (metallic), " 2.75
Calcium (per electrol.).....5.25
Cerium (pulv.).....2.25
" (fusum in globulis).....5.50
Chromium (fus.).....40
" (cryst.).....75
Cobalt (metallic), per kilo.....10.00
" (pure), per kilo.....40.00
Didymium (pulv.).....5.50
Erbium-Yttrium (oxydat.).....10.00
Gallium (cryst.).....100.00
Germanium (fus.).....37.50
" (pulv.).....35.00
Glucinum (pulv.).....7.00
" (cryst).....10.75
Indium.....5.00
Iridium (fusum).....1.25
Lanthanum (pulv.).....6.00
(per electrol.).....11.00
Lithium (in glob.).....5.00
" (wire).....6.25
Magnesium (bars).....01½
" (wire).....02
" (pulv.).....01¾
Manganese (fusum).....25
Molybdenum (pulv.).....12½
Niobium (pulv.).....4.25
Osmium.....1.00
Palladium (wire).....1.06
" (pulv.).....1.00
Potassium (metal), per kilo.....27.50
Rhodium.....1.63
Ruthenium.....2.50
Rubidium.....6.25
Selenium (cryst.).....50
" (precipitates).....62½
Sodium.....00¾
Strontium (per electrol.).....7.25
(ex amalgam).....3.25
Tantalum.....4.75
Tellurium (fusum).....50
" (precipitates).....22½
Thallium.....03¾
Titanium.....1.13
Tungsten (pure).....05
Uranium.....00
Vanadium.....1.00

NEW YORK MINING STOCK QUOTATIONS.

DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Sept. 23. H.	Sept. 23. L.	Sept. 25. H.	Sept. 25. L.	Sept. 26. H.	Sept. 26. L.	Sept. 27. H.	Sept. 27. L.	Sept. 28. H.	Sept. 28. L.	Sept. 29. H.	Sept. 29. L.	SALES.
Adams, Colo.													
Alice, Mont.													
Amador, Cal.													
Atlantic, Mich.													
Belcher, Nev.													
Belle Isle, Nev.													
Bodie Cons., Cal.													
Bos. & Mont., Mont													
Breece, Colo.													
Bulwer, Cal.													
Caledonia, S. Dak.													
Catalpa, Colo.													
Chrysolite, Colo.													
Colorado Central, Colo.													
Commonwealth, Nev.													
Comstock T. bonds, Nev.													
" scrip., Nev.													
Cons. Cal. & Va., Nev.													
Crown Point, Nev.													
Deadwood, Dak.													
Enterprise,													
Eureka, Cons., Nev.													
Father de Smet, Dak.													
Freeland, Colo.													
Gould & Curry, Nev.													
Grand Prize, Nev.													
Hale & Norcross, Nev.							.45					.4	100
Homestake, Dak.													
Horn-Silver, Utah.													
Independence, Nev.													
Iron Hill, Dak													
Iron Silver, Colo.													
Leadville Cons., Colo.							.11						1,500
Little Chief, Colo.													
Martin White, Nev													
Moulton, Mont													
Mt. Diablo, Nev.													
Navajo, Nev.													
N. Belle Isle, Nev.													
Ontario, Utah.													
Ophir, Nev			.85										100
Overman, Nev.													
Plymouth, Cal.													
Quicksilver, Pref., Cal.													
" Com., Cal.													
Quincy, Mich.													
Robinson Cons., Colo.													
Savage, Nev.													
Sierra Nevada, Nev.													
Silver Cord, Colo.													
Silver King, Ariz.													
Silver Min. of L. Valley													
Small Hopes, Colo.													
Standard Cons., Cal.													
Yellow Jacket, Nev													

NON-DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Sept. 23. H.	Sept. 23. L.	Sept. 25. H.	Sept. 25. L.	Sept. 26. H.	Sept. 26. L.	Sept. 27. H.	Sept. 27. L.	Sept. 28. H.	Sept. 28. L.	Sept. 29. H.	Sept. 29. L.	SALES.
Alpha., Nev.													
Alta, Nev													
American Flag, Colo.													
Andes, Cal.													
Astoria, Cal.													
Augusta, Ga.													
" bonds.													
Barcelona, Nev													
Belmont, Cal.													
Best & Belcher, Nev.	.60		.60										250
Bonanza King, Cal.													
Brunswick, Cal.					.02								(2,400)
Bullion, Nev.													
Butte & Bost., Mont.													
Castle Creek, Idaho.													
Challar.													
Comstock T., Nev.													
Con. Imperial, Nev.													
Con. Pacific, Cal.													
Crescent, Colo.													
Del Monte, Nev.													
El Cristo, Rep. of Col.													
Emmett, Colo													
Exchequer, Nev.													
Independence, Nev.													
Julia, Nev.													
Justice, Nev													
King & Pembroke.													
Lacrosse, Colo.													
Lee Basin, Colo.													
Mexican, Nev									.60				10
Minnesota Iron.													
Monitor, Colo.													
Monte Cristo, Rep. of C.													
Nevada Queen, Nev													
N. Standard, Cal.													
N. Commonwealth, Nev.													
Overman, Nev.													
Oriental & Miller, Nev.													
Phœnix Lead, Colo													
Phœnix of Ariz.	.50								.50	.43			2,100
Potosi, Nev.													
Rappahannock, Va.													
S. Sebastian, S. Sal													
Santiago.													
Scorpion, Nev.													
Seg. Belcher, Nev.													
Shoshone, Idaho.													
Silver Hill, Nev.													
Sullivan Con., Dak.													
Sutro Tunnel, Nev.													
Syndicate, Cal.													
Tornado Con., Nev.													
Union Cons., Nev													
Utah. Nev													

*Ex-dividend. †Dealt in at New York Stock Ex. Unlisted securities. ‡Assessment paid. ‖Assessment unpaid. Dividend shares sold, 1,500 Non-dividend shares sold, 4,859. Total shares sold, 6,550.

BOSTON MINING STOCK QUOTATIONS.

NAME OF COMPANY.	Sept. 22.	Sept. 23.	Sept. 25	Sept. 26.	Sept. 27.	Sept. 28.	SALES.
Atlantic, Mich.							
Bodie, Cal.							
Bonanza Development.							
Bost. & Mont., Mont.	22.38 21.75	22 63 22 25	22.00 21.50	21 25 21.00	20.75 20.63	21.00	2,332
Breece, Colo.							
Calumet & Hecla, Mich.	280			280	280		104
Catalpa, Colo.							
Central, Mich.							
Cœur d'Alene, Id							
Con. Cal. & Va., Nev.							
Dunkin, Colo							
Eureka, Nev.							
Franklin, Mich.		11.25				10.50 10 25	220
Honorine, Utah.							
Horn Silver, Utah.							
Kearsarge, Mich.			7.00 6.50	6.00			90
Lake Superior, Iron.							
Little Pittsburg, Colo.							
Minnesota Iron, Minn.							
Napa, Cal.							
Ontario, Utah.							
Osceola, Mich.	27 50 27 13	27.38	27 25 27.13	27.00 26 50	26.25		640
Quincy, Mich.	150		107½	1.6 105	105		58
Ridge, Mich.							
Sierra Nevada, Nev.							
Silver King, Ariz.							
Stormont, Utah.							
Tamarack, Mich.			143	140	135	138 137	87
Tecumseh, Mich.							

Dividend shares sold, 3,511 Non-dividend shares sold, 2,635.

NAME OF COMPANY.	Sept. 22.	Sept. 23.	Sept. 25.	Sept. 26.	Sept. 27.	Sept. 28.	SALES.
Allouez, Mich.							
Arnold, Mich.							
Aztec, Mich.							
Brunswick, Cal.							
Butte & Boston, Mont.	8.25	8.25 8 13	8.13 7.63	7.50	7.50 7.25		1,855
Centennial, Mich.	2.88 2.75		2.50	2.50	2 50 2 00		370
Colchis, N. Mex.							
Copper Falls, Mich.							
Crescent, Colo.							
Dana, Mich.							
Don Enrique, Mex.							
Geyser, Colo.							
Hanover, Mich.							
Humboldt, Mich.							
Hungarian, Mich.							
Huron, Mich.							
Mesnard, Mich.							
National, Mich.							
Native, Mich.							
Oriental & M., Nev.							
Phœnix, Ariz.							
Pontiac, Mich.							
Rappahannock, Va.							
Santa Fe, N. Mex.							
Shoshone, Idaho.							
South Side, Mich.							
Tamarack, Jr., Mich.	17 63 17.50		17.63	17.25			210
Washington, Mich.							
Wolverine, Mich.				1.63			200

Total shares sold, 6,166.

DIVIDEND-PAYING MINES.

	Name and Location of Company.	Capital Stock.	Shares. No.	Shares. Par	Assessments. Total levied.	Assessments. Date and amount of last	Dividends. Total paid.	Dividends. Date & amount of last.
1	Adams, s. L. c.	Colo.	$1,500,000	150,000	$10	*	$337,500	Jan.. 1892 .05
2	Alaska-Treadwell, g.	Al'ska	5,000,000	200,000	25		1,650,000	June 1893 .25
3	Alice, s.	Mont.	10,000,000	400,000	25	*	975,000	Nov.. 1891 .06⅔
4	Alma & Nel Wood., g	Idaho	300,000	30,000	10	*	60,000	Jan.. 1889 .50
5	Amador, g.	Cal..	1,250,000	250,000	5	*	31,250	Aug.. 1890 .12½
6	American, g.	Colo.	3,000,000	300,000	10	*	225,000	Mar.. 1892 .05
7	American Belle, s. & c.	Colo.	2,000,000	400,000	5	*	50,000	April 1891 .12½
8	Americ'n & Nettie, g. & s.	Colo..		300,000			175,800	Mar.. 1892 .05
9	Atlantic, c.	Mich.	1,000,000	40,000	25	280,000 April 1875	$1.00 700,000	Feb.. 1891 1.00
10	Argenta, s.	Nev..	10,000,000	100,000	100	335,000 July. 1889	.10 40,000	Feb.. 1880 .20
11	Argyle, g.	Colo..	1,000,000	1,000,000	1	*	20,000	Mar. 1892 .01
12	Aspen Mg. & S., s. L.	Colo..	2,000,000	200,000	10	*	780,000	June 1893 .10
13	Aurora, I.	Mich..	2,500,000	100,000	25		650,000	Feb.. 1893 2.00
14	Badger, s.	Ont...	250,000	50,000	5		37,500	Mar. 1890 .25
15	Bald Butte	Mont	250,000	250,000	1		110,000	July. 1893 .02
16	Bates Hunter, s. g.	Colo..	1,000,000	1,000,000	1		67,500	Dec.. 1891 .03¾
17	Belle Isle, s	Nev..	10,000,000	100,000	100	240,000 Mar	1893 .10	300,000 Dec.. 1879 .25
18	Belcher, s. g.	Nev..	10,400,000	104,000	100	3,242,100 July	1893 .25	15,397,000 April 1876 1.00
19	Bellevue, Idaho, s. L.	Idaho	1,250,000	125,000	10	120,000 Dec..	1889 .25	200,000 Jan.. 1890 .10
20	Best Friend	Colo.	1,000,000	1,000,000	1	*	90,000	Feb.. 1892 .01
21	Bi-Metallic, s. g.	Mont.	5,000,000	200,000	25		2,330,000	June 1893 .10
22	Bodie Con., g. l.	Cal..	10,000,000	100,000	100	640,000 July	1893 .15	1,602,572 April 1885 .50
23	Boston & Mont., g.	Mont.	2,500,000	250,000	10	*	520,000	June 1886 .15
24	Boston & Mont., c. s.	Mont.	3,125,000	125,000	25	*	2,075,000	Nov.. 1891 1.00
25	Brooklyn Lead, L. s.	Utah.	500,000	50,000	10		127,000	July. 1887 .05
26	Brotherton, l.	Mich.	2,000,000	80,000	25	*	120,000	Mar.. 1893 .03
27	Bulwer, g.	Cal..	10,000,000	100,000	10	155,000 July	1893 .15	191,000 Oct.. 1892 .05⅓
28	Bunker Hill & S. L.	Idaho	3,000,000	300,000	10	*	150,000	Oct.. 1888 .06
29	Caledonia, g.	Dak..	10,000,000	100,000	100	505,000 May.	1885 .15	192,000 Oct.. 1890 .08⅓
30	Calliope, s.	Colo..	1,000,000	1,000,000			140,000	Jan.. 1891 .00
31	Calumet & Hecla C	Mich..	2,500,000	100,000	25	1,200,000	39,850,000	Sept. 1893 5 00
32	Centen'l-Eureka, s. L.	Utah.	1,500,000	30,000	50		675,000	June 1893 .50
33	Central, c.	Mich..	500,000	20,000	25	100,000 Oct..	1861 .65	1,970,900 Feb.. 1891 1.00
34	Champion, g	Cali	340,000	34,000	10		139,700	July 1893 .10
35	Chrysolite, s. L.	Colo..	10,000,000	200,000	50	*	1,650,000	Dec.. 1884 .25
36	Clay County, g	Colo..	200,000	200,000	1	*	56,000	Nov.. 1891 .02
37	Clinton Con. g	Cal..	5,000,000	100,000	5		90,000	Nov.. 1891 .10
38	Cœur D'Alene, s. L.	Idaho	5,000,000	500,000	10		412,000	June 1893 .08
9	Colorado Central, s. L.	Colo..	2,750,000	275,000	10	*	530,000	April 1893 .05
40	Commonwealth, s.	Nev..	10,000,000	100,000	100	200,000 Nov.	1893 .10	20,000 Nov.. 1890 .20
41	Confidence, s. L.	Nev..	2,496,000	24,960	100	1,589,550 Aug.	1892 .50	199,680 April 1889 1.00
42	Cons. Cal. & Va., s. g	Nev..	21,600,000	216,000	100	216,000 Dec..	1892 .50	3,628,000 Aug. 1891 .50
43	Contention, s.	Ariz..	12,500,000	250,000	50			2,637,500 Aug. 1892 .20
44	Cook's Peak, s.	N. M..	2,000,000	200,000	10			114,532 Nov. 1892 .05
45	‖Cop. Queen Con., c.	Ariz..	2,000,000	200,000	10			1,460,000 May. 1893 .50
46	Coptis	Nev..	10,000,000	100,000	100			67,000 July.. 1892 .12
47	Cortez, s.	Nev..	1,500,000	300,000	05	*		687,000 Mar.. 1892 .50
48	Crescent, s. L. g.	Utah.	15,000,000	600,000	25	60,000 Oct	1892 .10	238,000 Oct.. 1888 .03
49	Crown Point, g. s.	Nev..	10,000,000	100,000	100	2,750,000 June	1893 .25	11,898,000 Jan.. 1875 2.00
50	Cumberland, L. s.	Mont.	5,000,000	500,000	10	*		15,000 Nov. 1889 .08
51	Daly, s. L.	Utah.	3,000,000	150,000	20			2,800,000 June 1893 .25
52	Deer Creek, s. g.	Idaho	1,000,000	200,000	5	*		20,000 June 1889 .05
53	Deadwood-Terra, g.	Dak..	5,000,000	200,000	25	*		1,150,000 Oct.. 1892 .05
54	DeLamar, s. g.	Idaho	2,000,000	400,000	5			900,000 July 1893 .25

NON-DIVIDEND-PAYING MINES.

	Name and Location of Company.	Capital Stock.	Shares. No.	Shares. Par	Assessments. Total levied.	Assessments. Date and am't of last.
1	Alliance, s. g.	Utah.	$100,000	100,000	$1	$120,000 Feb.. 1891 .20
2	Allouez, c.	Mich.	2,000,000	80,000	25	737,000 Jan.. 1890 .70
3	Alpha Con., g. s.	Nev..	3,000,000	30,000	100	209,000 Sept. 1892 .10
4	Alta, s.	Nev..	10,080,000	100,800	100	3,369,880 Jan. 1892 .10
5	American, c.	Idaho	5,000,000	500,000	100	
6	American Flag, s.	Colo..	1,250,000	125,000	1	300,000 June 1887
7	Amity, s.	Colo..	250,000	250,000	20	
8	Anchor, s. L. g.	Utah.	3,000,000	150,000	5	410,000 June 1890 .20
9	Anglo-Montana, Lt.	Mont.	600,000	120,000	125	
10	Appalachian, g.	N. C.	1,750,000	1,400,000	20	
11	Arizona, c.	Ariz..	3,575,000	160,000	2	
12	Astoria, g.	Cal..	200,000	100,000	5	
13	Atlanta, g. s.	Idaho	3,250,000	650,000	25	
14	Barcelona, g.	Nev..	5,000,000	200,000	5	*
15	Bear Creek	Idaho	100,000	20,000	1	
16	Belmont, g.	Cal..	500,000	500,000	100	*
17	Belmont, s.	Nev..	5,000,000	50,000	100	735,000 April 1886 .10
18	Best & Belcher, s. g.	Nev..	10,080,000	100,800	10	2,405,275 Aug.. 1892 .25
19	Black Oak, g.	Cal..	3,000,000	300,000	100	*
20	Boston Con., g.	Cal..	10,000,000	100,000	1	170,000 Nov.. 1883 .25
21	Brownlow, g.	Colo..	250,000	250,000	5	
22	Brunswick, g.	Cal..	2,000,000	4 0,000	2	
23	Buckeye, s. L.	Mont.	1,000,000	500,000	100	
24	Bullion, s. g.	Nev.	10,000,000	100,000	100	2,890,000 Aug. 1892 .25
25	Burlington, g. s.	Cal..	10,000,000	100,000		
26	Butte & Boston, c. s.	Mont.	5,000,000	200,000	10	
27	Butte Queen, g.	Cal..	1,000,000	100,000	1	6,000 Jan.. 1892 .04
28	Calaveras, g.	Cal..	500,000	500,000	5	
29	Calaveras Con., g.	Cal..	800,000	160,000	10	
30	California, g.	Cal..	1,000,000	100,000	5	9,000 Mar.. 1892 .03
31	California Con. L. Q.	Cal..	2,250,000	450,000	10	
32	Camille, g.	Ga	1,500,000	150,000	5	
33	Carisa, g.	Wy..	500,000	100,000	2	*
34	Carupano, g. s. L. c.	Ven..	200,000	100,000	2	*
35	Cashier, g. s.	Colo..	500,000	250,000	100	*
36	Challenge Con., g. s.	Nev..	5,000,000	50,000	10	
37	Cherokee, g.	Cal..	1,500,000	150,000	100	
38	Chollar, s. g.	Nev..	11,200,000	112,000	2	1,320,000 May.. 1892 .50
39	Cleveland, T.	Dak..	1,000,000	500,000	10	*
40	Colchis, s. g.	N. M..	500,000	150,000	5	
41	Colorado, s.	Colo..	1,625,000	325,000	1	
42	Comstock, s.	Utah.	1,250,000	250,000	100	
43	Comstock Tun.	Nev..	10,000,000	100,000	100	35,000 Mar.. 1887 .15
44	Con. Imperial, g. s	Nev..	5,000,000	50,000	50	2,062,500 Jan.. 1892 .25
45	Con. New York, s. g.	Nev..	5,000,000	100,000	100	110,000 Mar.. 1892 .10
46	Con. Pacific, g.	Cal..	6,000,000	60,000	10	198,000 June 1890 .10
47	Con. Silver, s.	Mo.	2,500,000	250,000	5	
48	Cordova Union, g.	Cal..	1,000,000	200,000	10	
49	Crescent, s. L.	Colo..	3,000,000	300,000	100	*
50	Crocker, s.	Ariz..	10,000,000	100,000	1	165,000 Aug. 1892 .05
51	Crowell, g.	N. C..	500,000	500,000	1	
52	Dahlonega, g.	Ga..	250,000	250,000	10	*
53	Dandy, s.	Colo..	5,000,000	500,000		
54	Decatur s	Colo..	1,500,000	300,000		

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Assessments. No.	Par	Assessments. Total Levied	Assessments. Date and amount of last.			Dividends. Total paid.	Dividends. Date & amount of last.	
55	Derbee B. Grav., G...	Cal..	10,000,000	100,000	10	100,000	Sept.	1892	.10	60,000	Aug..	1891 .10
56	Dexter, g. s	Nev..	1,000,000	100,000	10	.....	.....	.....	.....	105,000	July	1893 .25
57	Dunkin, s. L...	Colo..	5,000,000	200,000	25	*	.....	.....	.....	890,000	Oct..	1889 .05
58	Elkhorn, s. L...	Mont.	1,000,000	200,000	5	*	.....	.....	.....	1,038,670	June	1893 37½
59	Enterprise, s.	Colo..	2,500,000	500,000	5	*	.....	.....	.....	850,000	May.	1893 .65
60	Eureka Con., s. L.. G.	Nev...	500,000	50,000	10	*	.....	.....	.....	5,112,500	Jan..	1892 .25
61	Evening Star, s. L....	Colo..	10,000,000	100,000	100	200,000	Nov..	1878	1.00	1,450,000	Dec.	1889 .2
62	Father de Smet, G....	Dak..	10,000,000	100,000	100	220,000	June	1871	.....	1,125,000	Dec..	1885 .20
63	Franklin, C....	Mich..	1,000,000	40,000	25	*	.....	.....	.....	1,100,000	July	1892 2.00
64	Freeland, S. G.....	Colo..	5,000,000	200,000	25	.....	.....	.....	.....	190,000	July.	1886 .10
65	Garfield Lt., G. S....	Nev...	500,000	100,000	5	.....	.....	.....	.....	90,000	April	1888 .12½
66	Giengarry	Mont.	1,000,000	100,000	10	.....	.....	.....	.....	10,000	June	1891 .10
67	Gold Rock.....	Colo..	500,000	500,000	1	.....	.....	.....	.....	25,750	Dec..	1891 .01
68	Golden Reward. . .	S.Dak	1,250,000	250,000	5	*	.....	.....	.....	85,000	April	1893 .02
69	Gould & Curry, s. G..	Nev...	10,800,000	108,000	100	4,591,200	June	1892	.25	3,826,800	Oct..	1870 10.00
70	Grand Prize, s.....	Nev...	10,000,000	100,000	100	785,000	Jan..	1890	.30	495,000	Mar.	1884 .25
71	Granite, s. L..... ...	Idaho	10,000,000	500,000	1	*	.....	.....	.....	83,400	Nov..	1890 .02
72	Granite Mountain. s.	Mont.	10,000,000	400,000	25	.....	.....	.....	.....	12,120,000	July.	1892 .20
73	Great Western, L. Q..	Cal...	5,000,000	50,000	100	.....	.....	.....	.....	444,861	May.	1893 .25
74	Green Mountain, G..	Cal...	1,250,000	125,000	10	.....	.....	.....	.....	212,000	Nov.	1881 .07½
75	Hale & Norcross, G. s.	Nev...	11,200,000	112,000	100	5,556,800	June	1893	.50	1,822,000	Aug.	1888 .50
76	Hecla Con., s. G. L. C.	Mont.	1,500,000	30,000	50	.....	.....	.....	.....	1,980,000	Apr.	1893 .50
77	Hel'a Mg.& Red,s.L.G.	Mont.	3,315,000	663,000	5	*	.....	.....	.....	197,970	July.	1886 .06
78	Helena & Frisco, s.L.	Idaho	2,500,000	500,000	5	.....	.....	.....	.....	170,000	July.	891 .02
79	Helena & Victor.....	Mont.	1,000,000	200,000	5	.....	.....	.....	.....	80,000	May.	1892 .05
80	***Holmes, s..... ..	Nev...	1,000,000	100,000	100	370,000	May	1890	.25	75,000	Apr.	1886 .25
81	Homestake, G.....	Dak..	12,500,000	125,000	100	200,000	July.	1878	1.00	5,003,750	June	1893 .10
82	Honorine, s. L.....	Utah.	500,000	250,000	2	37,500	April	1889	.05	125,000	Sep.	1887 .05
83	Hope, s.....	Mont.	1,000,000	100,000	10	*	.....	.....	.....	508,252	Oct..	1893 .25
84	Horn-Silver, s. L.....	Utah.	10,000,000	400,000	25	*	.....	.....	.....	4,700,000	Mar.	1893 .12½
85	Hubert, G.....	Colo..	1,000,000	1,000,000	1	.....	.....	.....	.....	247,000	Dec	1889 .00½
86	Idaho, G.....	Cal..	310,000	3,100	100	*	.....	.....	.....	5,470,250	April	1893 2.50
87	Illinois, s.....	N. M..	100,000	100,000	1	*	.....	.....	.....	45,000	April	1889 .20
88	Iron Hill, s..... ...	Dak..	2,500,000	250,000	10	134,000	July.	1889	.03	156,250	Nov..	1887 .07½
89	Iron Mountain, s....	Mont.	5,000,000	500,000	10	*	.....	.....	.....	245,000	July.	1893 .03
90	Iron-Silver, s. L.....	Colo..	10,000,000	500,000	20	*	.....	.....	.....	2,500,000	April	1889 .20
91	Jack Rabbit, G.....	Cal...	5,000,000	100,000	10	100,000	Sept.	1892	.10	260,000	Aug.	1891 .10
92	Jackson, G. S..... ...	Nev...	1,000,000	50,000	100	247,500	Mar..	1893	.20	60,000	Jan.	1891 .10
93	Kearsarge, C..... ...	Mich..	10,000,000	40,000	25	190,000	Oct..	1887	1.00	80,000	Jan.	1890 2.00
94	Kennedy s.....	Cal...	10,000,000	100,000	100	.....	.....	.....	.....	387,000	May..	1892 .15
95	Kentuck, s. G.....	Nev..	3,000,000	30,000	100	454,180	Oct..	1891	.15	1,350,000	Dec.	1884 .10
96	La Plata, s. L..... ...	Colo..	2,000,000	200,000	10	*	.....	.....	.....	610,000	Sept.	1882 .30
97	Leadville Con., s. L..	Colo..	4,000,000	400,000	10	*	.....	.....	.....	316,500	Feb..	1892 .03
98	Lexington, G. S.	Mont.	4,000,000	40,000	100	*	.....	.....	.....	626,000	Jan.	1890 2.00
99	Little Chief, s. L.....	Colo..	10,000,000	200,000	50	.....	.....	.....	.....	820,000	Dec..	1890 .05
100	Little Rule, s..... .	Colo..	500,000	500,000	1	.....	.....	.....	.....	220,000	Dec..	1891 .02
101	Maid of Erin.....	Colo..	3,000,000	600,000	5	.....	.....	.....	.....	708,500	April	1893 .25
102	Mammoth, s. L. C.....	Utah	10,000,000	400,000	250	110,000	... ...	1882	.25	1,040,000	Dec..	1891 .10
103	Martin White, s.....	Nev.	10,000,000	100,000	100	1,300,000	Nov..	1892	.25	140,000	Dec..	1886 .25
104	Mary Murphy, s. G....	Colo..	350,000	3,500	101	*	.....	.....	.....	175,000	May..	1888 5.00
105	Matchless, s. L	Colo..	500,000	500,000	1	*	.....	.....	.....	15,000	Feb...	1890 .00½
106	Maxfield	Utah	3,000,000	300,000	10	.....	.....	.....	.....	117,000	April	1892 .03
107	Mayflower, D. gravel	Cal...	1,000,000	100,000	10	.....	.....	.....	.....	160,000	July	1893 .10
108	May Mazeppa, s. L....	Colo..	1,000,000	100,000	1	*	.....	.....	.....	265,000	Oct..	1891 .03½
109	Minas Prietas, G. S...	Mex..	1,000,000	100,000	10	*	.....	.....	.....	350,000	Dec..	1890 .50
110	Minnesota, C.....	Mich..	1,000,000	40,000	25	420,000	April	1886	1.00	1,820,000	Mar..	1876 .....
111	Mollie Gibson, s....	Colo..	5,000,000	1,000,000	5	.....	.....	.....	.....	3,780,000	Sept.	1893 .05
112	Monitor, G.....	S.Dak	2,500,000	250,000	10	.....	.....	.....	.....	45,000	Oct..	1890 .03
113	Mono, G.....	Cal..	5,000,000	50,000	100	797,500	Feb..	1893	.25	12,500	Mar.	1886 .25
114	Montana, Lt., G. S....	Mont.	3,300,000	660,000	5	*	.....	.....	.....	2,619,075	June.	1891 12½
115	Morning Star, s. L....	Colo..	1,000,000	100,000	10	.....	.....	.....	.....	925,000	April	1893 .25
116	Morning Star Drift,G	Cal...	240,000	2,400	100	.....	.....	.....	.....	140,600	April	1893 3.00
117	Moulton, s. G.....	Mont.	2,000,000	400,000	5	*	.....	.....	.....	410,000	Nov.	1892 .07½
118	Mt. Diablo, s.....	Nev..	5,000,000	50,000	100	137,500	June	1880	2.00	210,000	July.	1891 .20
119	Napa, q.....	Cal..	700,000	100,000	7	.....	.....	.....	.....	590,000	Oct..	1893 .10
120	Navajo, G. S..... ...	Nev..	10,000,000	100,000	100	590,000	Mar..	1893	.10	229,950	April	1889 .10
121	Newton.....	Cal...	10,000,000	100,000	100	*	.....	.....	.....	10,000	May..	1891 .05
122	New California, G....	Colo..	800,000	160,000	5	.....	.....	.....	.....	48,800	May..	1890 .12½
123	New Guston, s.....	Colo..	550,000	110,000	5	.....	.....	.....	.....	1,877,500	April	1892 .75
124	North Banner Con..	Cal...	1,000,000	100,000	10	.....	.....	.....	.....	20,000	July..	1891 .05
125	North Commonw'th	Nev...	10,000,000	100,000	10	90,000	Jan..	1893	.10	25,000	June.	1891 .25
126	N. Hoover Hill, G. s..	N. C.	300,000	120,000	2½	*	.....	.....	.....	30,000	Dec..	1885 .06½
127	North Belle Isle, s...	Nev...	10,000,000	100,000	100	440,000	April	1893	.10	230,000	May .	1888 .50
128	North Star, G..... ...	Cal..	1,000,000	100,000	10	.....	.....	.....	.....	450,000	June	1893 .50
129	Omaha Cons.,G.....	Cal...	2,400,000	24,000	100	.....	.....	.....	.....	30,000	May..	1892 .15
130	Ontario, s. L.....	Utah	15,000,000	150,000	100	.....	.....	.....	.....	13,175,000	Oct..	1892 .50
131	Ophir, G. S.....	Nev..	10,000,000	100,000	100	4,391,040	July.	1893	.25	1,395,300	Jan..	1880 1.00
132	Original, s. C.....	Mont.	1,500,000	60,000	25	*	.....	.....	.....	138,000	Jan..	1889 .05
133	Oro, s. L. G.....	Colo..	500,000	100,000	5	.....	.....	.....	.....	95,000	July.	1890 .20
134	Osceola, C..	Mich..	1,250,000	50,000	25	480,000	April	1876	1.60	1,747,500	May.	1893 1.00
135	Pacific Coast, s.....	Cal...	1,500,000	15,000	100	.....	.....	.....	.....	1,748,000	April	1893 .10
136	Parrot, C.....	Mont.	1,300,000	130,000	10	.....	.....	.....	.....	17,500	July	1891 .75
137	Petro.....	Utah.	10,000,000	10,000	100	.....	.....	.....	.....	2,669,926	April	1893 .19
138	Plumas Eureka, G....	Cal...	1,406,250	140,625	10	*	.....	.....	.....	2,280,000	Feb.	1893 .40
139	Plymouth Con , G....	Cal...	5,000,000	100,000	50	*	.....	.....	.....	68,266	Septl	1892 .....
140	Poorman; G. S.....	Idaho	375,000	300,000	125	*	.....	.....	.....	1,823,911	June	1891 1.25
141	Quicksilver, pref., Q.	Cal...	4,300,000	43,000	100	.....	.....	.....	.....	843,567	July.	1882 .40
142	" com., Q	Cal...	5,700,000	57,000	100	.....	.....	.....	.....	6,620,000	Aug..	1892 3.00
143	Quincy, C....	Mich..	1,250,000	50,000	25	200,000	Dec..	1862	.....	153,000	Dec.	1892 .10
144	Red Cloud.....	Idaho	1,000,000	200,000	5	*	.....	.....	.....	50,000	Dec..	1891 .01
145	Reed National, s. G..	S.Dak	500,000	500,000	1	*	.....	.....	.....	20,000	Aug..	1891 .03
146	Retriever, L.....	Colo..	1,250,000	250,000	5	*	.....	.....	.....	50,250	April	1892 .01½
147	Rialto, G.....	Colo..	300,000	300,000	1	*	.....	.....	.....	4,346,337	Aug..	1892 .2
148	Richmond, s. L.....	Nev..	1,350,000	54,000	25	*	.....	.....	.....	25,000	May.	1893 .12½
149	Rico-Aspen.....	Colo..	5,000,000	1,000,000	5	.....	.....	.....	.....	99,785	Feb..	1890 .50
150	Ridge, C.....	Mich..	500,000	20,000	25	219,939	Mar.	1886	50	585,000	Mar .	1892 .05
151	Robinson Con., s. L..	Colo..	10,000,000	200,000	50	*	.....	.....	.....	96,000	May .	1892 .00 1-10
152	Running Lode, G....	Colo..	1,000,000	1,000,000	1	*	.....	.....	.....	4,460,000	June	1869 3.00
153	Savage, s.....	Nev..	11,200,000	112,000	100	6,966,000	June	1893	.25	300,000	Oct..	1891 2.50
154	Sheridan, s. G.....	Colo..	300,000	3,000	100	*	.....	.....	.....	7,500	April	1893 .01
155	Shoshone, G..... ...	Idaho	150,000	150,000	1	.....	.....	.....	.....	1,544,620	April	1893 .12½
156	Sierra Buttes, G.....	Cal...	2,225,000	122,500	10	.....	.....	.....	.....	102,000	Jan..	1871 1.00
157	Sierra Nevada, s. G..	Nev..	10,000,000	100,000	100	6,521,910	Aug	1893	.20	40,000	May..	1889 .02
158	Sierra Nevada, s. L..	Idaho	1,000,000	4,000,000	1	*	.....	.....	.....	60,000	Aug..	1891 .02½
159	Silent Friend.....	Colo..	500,000	500,000	1	.....	.....	.....	.....	265,000	April	1889 .10
160	Silver Cord, s. L. G...	Colo..	4,500,000	450,000	10	.....	.....	.....	.....	1,950,000	July	1887 .25
161	Silver King, s.....	Ariz..	10,000,000	100,000	100	240,000	Aug..	1892	.25	300,000	Dec..	1891 4.05
162	Silver Mg.of L.V.,s.L.	N. M..	500,000	500,000	1	.....	.....	.....	.....	30,000	Nov.	1892 4.00
163	Slide.....	Colo..	500,000	5,000	100	*	.....	.....	.....	32,000	Nov.	1892 .15
164	Small Hopes Con., s.	Colo..	5,000,000	250,000	20	*	.....	.....	.....	50,000	Jan.	1881 .25
165	Spring Valley, G.....	Cal...	200,000	200,000	1	50,000	Oct.	1883	.25	3,665,000	July.	1893 .10
166	Standard, G. S..... .	Cal...	10,000,000	100,000	100	100,000	June	1892	.50	155,000	Nov .	1881 .05
167	Stormont, s.....	Utah	500,000	500,000	1	*	.....	.....	.....	1,974,000	Dec..	1890 .02
168	St. Joseph, L.....	Mo..	1,500,000	150,000	10	*	.....	.....	.....	27,000	Mar .	1892 .10
169	Swansea, G. S..... ...	Colo..	600,000	60,000	10	*	.....	.....	.....	3,160,000	Oct..	1891 .01
170	Tamarack, C.....	Mich..	1,250,000	50,000	25	520,000	April	1893	3.00	9,000	Nov.	1892 .01½
171	Teal & Poe.....	N. M..	150,000	150,000	1	.....	.....	.....	.....	1,250,000	April	1893 .10
172	Tombstone, G. S. L...	Ariz..	12,500,000	500,000	25	*	.....	.....	.....	10,000	May.	1893 .00½
173	Trinity Riv'r Hydr.,G	Colo..	500,000	500,000	1	*	.....	.....	.....	207,500	Jan	1892 .10
174	United Verde, C.....	Ariz..	3,000,000	300,000	10	*	.....	.....	.....	75,000	Sept.	1893 .07½
175	Victor, G...	Colo..	1,000,000	200,000	5	*	.....	.....	.....	337,500	Nov.	1889 .37½
176	Vicia L., s. L.....	Idaho	750,000	150,000	5	.....	.....	.....	.....	20,000	Dec.	1889 .05
177	Ward Con., s.....	Colo.	2,000,000	200,000	10	.....	.....	.....	.....	25,000	Oct..	1889 .25
178	Woodside, s. L..... .	Utah	100,000	100,000	10	.....	.....	.....	.....	64,500	Sept.	1892 .10
179	W. Y. O. D.....	Cal..	30,000	15,000	2	22,500	May.	1891	.10	1,405,000	Sept.	1871 1.50
180	Yankee Girl, s.....	Colo.	1,300,000	260,000	5	.....	.....	.....	.....	2,184,000	Aug.	1891 1.50
181	Yellow Jacket, G. S..	Nev.	12,000,000	120,000	100	5,556,000	July.	1892	.25	25,000	Oct..	1891 .05
182	Yosemite No. 2.....	Utah.	1,000,000	100,000	10	.....	.....	.....	.....	175,000	Jan..	1888 1.00
183	Young America, G...	Cal...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
..	.....	..

COAL AND COAL RAILROAD STOCKS.

NAMES OF STOCKS.	Sept. 23. H.	Sept. 23. L.	Sept. 25. H.	Sept. 25. L.	Sept. 26. H.	Sept. 26. L.	Sept. 27. H.	Sept. 27. L.	Sept. 28. H.	Sept. 28. L.	Sept. 29. H.	Sept. 29. L.	Sales
Am. Coal	.....	.....	.....	.....	66	.....	66½	.....	67	.....	68	.....	477
Balt. & Ohio	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. pref	.....	.....	.....	.....	.....	.....	26	.....	.....	.....	.....	.....	100
Buff., R. & P.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. pref	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cambria Iron	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ches. & Ohio	.....	.....	16¾	.....	16	15¾	.....	.....	16	15⅞	16¼	16	3,768
do. 1st pref	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Col. C. & I	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Col. Coal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Colorado Fuel	25	.....	23¾	23½	22	21⅝	.....	.....	.....	.....	.....	.....	600
do. pref	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Col., H V.& Tol.	19	18⅝	18¼	17⅞	18	17	18¾	18	19⅛	19	20⅛	19⅜	2,740
do. pfd	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Col. & H. Coal	.....	.....	.....	.....	.....	.....	.....	.....	8	7½	9¼	8⅛	825
do. pfd	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cons. Coal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Del. & Hud. C	120⅛	119⅜	119¼	119	118⅝	118	118⅝	117⅝	119	118	120	118⅜	9,019
Del., L. & West.	143	143⅜	143	142	143⅜	141¾	145	144⅜	149½	148	150	147	13,540
Hunt. & B.Top	.....	.....	.....	.....	.....	.....	.....	.....	35⅝	.....	.....	.....	2
do. pref	.....	.....	.....	.....	.....	.....	.....	.....	50	49¾	.....	.....	50
Lake Erie&Wes	.....	.....	15¾	15	15	.....	15	.....	15	.....	16	.....	1,120
do. pref	.....	.....	68⅝	68¼	.....	.....	.....	.....	67	.....	.....	.....	310
Lehigh C. & N.	50	49	.....	.....	49¾	49½	49⅜	49	.....	.....	.....	.....	46
Lehigh Valley	33⅛	32⅛	32¾	32½	32⅜	31⅝	31¾	31¼	32⅛	31⅞	.....	.....	2,483
Maryland Coal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. pref	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Morris & Essex	.....	.....	.....	.....	.....	.....	.....	.....	143½	.....	.....	.....	2
New Cent. Coal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
N. J. Central	107¾	.....	107¾	107¼	104½	103	104¾	104	106	.....	108	106½	3,155
N. Y., L. & W	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
N. Y., L. E.& W	14¼	13	13¾	12⅝	13¾	12¾	13⅜	12⅝	14¼	13⅜	14⅜	13⅛	34,435
do. pref	30	26⅜	26¾	25½	23½	.....	.....	.....	.....	.....	.....	.....	751
N.Y., Susq. & W	13½	.....	13½	.....	13¾	13¾	13⅛	.....	13¾	.....	.....	.....	963
do. pref	.....	.....	42½	.....	.....	.....	.....	.....	.....	.....	.....	.....	50
do. pref., new	.....	.....	.....	.....	41	40¾	.....	.....	43	42¾	43¼	43	754
N. & West	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
do. pref	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Penn. Coal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Penn. R. R	50¾	50¾	50⅝	5 ¼	50¼	50⅛	50⅜	50⅛	50⅛	50	.....	.....	3,549
Phil. & Reading	18⅝	18⅜	18⅜	18	17¾	16	16⅛	14⅜	16⅜	14⅜	18⅜	16⅛	74,042
Tenn. C. & I	15⅜	15	15	.....	15	14⅜	14⅜	14	15	14⅜	15⅜	.....	4,702
do. pref	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wheel. & L. E	13½	.....	.....	.....	13	.....	14¾	13⅜	.....	.....	.....	.....	650
do. pref	.....	.....	43	.....	41⅞	.....	43¼	.....	42	.....	.....	.....	340

Total shares sold, 127,523.

INDUSTRIAL AND TRUST STOCKS.

NAME OF STOCKS.	Sept. 23. H.	Sept. 23. L.	Sept. 25. H.	Sept. 25. L.	Sept. 26. H.	Sept. 26. L.	Sept. 27. H.	Sept. 27. L.	Sept. 28. H.	Sept. 28. L.	Sept. 29. H.	Sept. 29. L.	SALES.
Adams Express	148	138	140	.....	.....	.....	.....	.....	.....	.....	.....	.....	51
Am. Cotton Oil	33½	.....	34½	32	32½	32	32½	32	34¾	33	35¼	34⅛	8,690
do. pref	67½	67	66	.....	65⅛	64¾	.....	.....	68¼	67	69¼	68⅜	2,028
Am. Dist. Tel	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Am. Express	.....	.....	108	.....	108	.....	.....	.....	.....	.....	.....	.....	63
Am. Sugar Ref	83¾	83⅜	87⅜	85⅛	86¾	84¼	86¾	85½	87⅛	86	89⅛	86⅞	169,659
do. pref	86	.....	85	.....	84½	81⅜	.....	.....	86⅜	85	8 ⅜	86	2,201
Edison E. Ill. Co.	.....	.....	91	.....	.....	.....	92	.....	.....	.....	.....	.....	150
Edison Gen. El	46¼	45½	45⅜	43⅝	43⅜	39⅜	42⅛	40½	42⅞	39¾	43	40⅜	74,690
Nat. Cord. Co	23¾	.....	24	23½	23¼	21⅜	23	22½	24⅝	23¼	25¾	24¼	7,115
do. pref	56	.....	56	.....	54	.....	.....	.....	.....	.....	.....	.....	30
Nat. Lead Co	26½	25½	25¼	24¾	25¼	24½	25½	25	26⅜	25⅝	28⅛	25⅜	17,942
do. pref	70	68	52½	69	68¼	.....	68½	68½	69⅝	68½	71¼	62½	2,832
Nat. Linseed Oil	.....	.....	19½	.....	18½	17	16¾	16½	.....	.....	.....	.....	805
U. S. Express	.....	.....	50	.....	.....	.....	52	50	.....	.....	.....	.....	71
U. S. Rubber	.....	.....	.....	.....	30⅜	30	.....	.....	.....	.....	.....	.....	725
do. pref	.....	.....	.....	.....	77	.....	.....	.....	80	.....	.....	.....	40
Wells, Fargo Ex	.....	.....	.....	.....	135	131	138	136	.....	.....	.....	.....	73
Western Union	82	81⅝	81⅝	79½	79⅜	78	79¼	78⅜	80⅜	78⅞	82	80½	89,222

Total sales, 276,360.

CALIFORNIA.

San Francisco.

NAMES OF STOCKS.	CLOSING QUOTATIONS. Sept 22	Sept. 23.	Sept. 25.	Sept. 26.	Sept. 27.	Sept. 28.
Alpha	.....	.....	.....	.....	.....	.....
Alta	.10	.10	.10	.10	.10	.10
Belcher	.....	.....	.....	.....	1.15	.....
Belle Isle	.....	.....	.....	.....	.05	.....
B. & Belch	.55	.50	.50	.45	.40	.45
Bodie	.15	.15	.15	.15	.15	.15
Bulwer	.....	.....	.....	.....	.10	.15
Challar	.25	.20	.20	.20	.20	.15
Com'w'lth	.....	.....	.....	.....	.....	.....
Con.C.&V.	1.30	1.25	1.25	1.30	1.30	1.25
Con. Pac.	.....	.....	.....	.....	.....	.....
Crown Pt.	.20	.....	.....	.10	.15	.15
Del Monte	.....	.....	.....	.....	.....	.....
E'rekaCon	.....	.....	.....	.....	.....	.....
G'ld & C'y	.25	.20	.20	.20	.20	.20
Hale & N.	.40	.45	.45	.40	.40	.40
M. White	.....	.....	.....	.....	.....	.....
Mexican	.60	.55	.55	.45	.55	.55
Mono	.....	.....	.....	.....	.....	.....
Mt. Diablo	.....	.....	.....	.....	.....	.....
Navajo	.....	.....	.....	.....	.....	.....
Nev. Qu'n.	.....	.....	.....	.....	.....	.....
N.B'lleIsle	.....	.....	.....	.....	.....	.....
N. Co'w'th	.....	.....	.....	.....	.....	.....
Ophir	.80	.75	.75	.80	.80	.75
Potosi	.35	.30	.30	.30	.30	.25
Savage	.40	.40	.40	.30	.30	.25
Sierra Nev	.50	.45	.45	.40	.40	.40
Uni'n Con	.30	.35	.35	.30	.30	.25
Utah	.10	.05	.05	.05	.05	.05
Yel. Jack	.40	.40	.40	.45	.40	.40

COLORADO. Sept. 18.

Aspen.

	Price.
Argentum Juniata	$0.33
Aspen Contact	.50
Aspen Deep Mining	.....
Best Friend	.....
Bi-Metallic	.01½
Bushwacker	.10
Delia S.	.....
Gold Valley Placer	.....
Little Annie	.06
Mollie Gibson	2.25
Pontiac	.04½
Smuggler	19.00
St. Joe & Mineral Farm	.05½
U. S Paymaster	.....

Colorado Springs. Sept. 23.

	Bid.	Asked.
Anaconda Gold	$12¾	$13¾
Anchoria Lel'd	...	.04
Antlers P. K. Reg	...	.10
Calumet	...	.01¾
Cleopatra	.02	.03
C. O. D	.03	.....
Cook's Peak	...	.40
Del Monte	...	.03
Enterprise	...	.03½
Fanny Rawlins	...	.05⅝
Golden Dale	...	.01
Isabella	.10¼	...
Jeff Davis	.01	...
Lemhi	...	.65
Mollie Gibson	2.30	2.40
Mount Rosa	.01¼	.....
Pharmacist	.18	.20
Summit M. & M	.14	.15½
Union	.03½	.05
Work	.02⅜	.02¾
World	.01½	.....

MARYLAND.

Baltimore. Sept. 28.

COMPANY.	Bid.	Asked.
Balt. & N. C	....	$0.04
Conrad Hill	....	.10
Cons. Coal	....	.33
Diamond Tunnel	....	.14@.15
George's Creek Coal.	....	106
Howard C. & C.	1.15	....
Lake Chrome	.01@.02	....
Silver Valley	....	.40@.45

MONTANA.

Helena.

Prices for the week ending Sept. 21:

	Bid.	Asked.
Bald Butte (Mont.)	$2.10	$2.50
Benton Group (Neihart), Mont.	.10	.15
Combination(Phillipsb'g),Mont	...	.75
Cumberland (Castle), Mont	...	....
Elizabeth (Phillipsb'g), Mont	...	.20
Florence (Neihart)	...	....
Helena & Victor, Mont	...	....
Iron Mountain(Missoula),Mont	.40	.50
Piegan (Marysville), Mont	.25	1.00
Peorman (Cœur d'Alene),Idaho	.40	.50
Whitlach Union & MacIntyre.	.35	.40
Yellowstone	...	....

MINNESOTA.

Duluth. Sept. 22.

LISTED STOCKS.

	Par.	Bid.	Asked.
Biwabik M. Iron Co	100	$20.00	$22.00
Cincinnati Iron Co	25	.27	.40
Clark Iron Co	100	....	.60
Cosmopolitan Iron Co	...	...	....
Great Northern Min. Co.	100	4.00	4.50
Kanawha Iron Co	100	.10	.20
Keystone Iron Co	...	...	.40
Lake Superior Iron Co	25	2.00	3.00
Lincoln Iron Co	...	....	.50
Little Mesaba Iron Co	100	....	....
Mesaba Moun. Iron Co.	100	11.00	15.50
Minneapolis Iron Co	100	.02	.15
Mountain Iron Co	100	45.00	55.00
Shaw Iron Co	100	3.00	3.25
Security Land & Exp. Co.	10	10.00	16.00
Washington Iron Co	100	....	....

UNLISTED STOCKS.

Adams Iron Co	..	$8.00	$9.00
Agate Copper Mining Co	..	....	1.00
Allegheny Iron Co	10	....	....
Aurora Iron Co	..	....	....
Buckeye Iron Co	100	....	2.50
Buffalo Land & Exp. Co	..	...	.50
Camden Iron Co	..	....	.25
Chandler Iron Co	..	....	9.00
Charleston Iron Co	100	.25	.30
Champion Iron Co	100	.10	.40
Chicago Iron Co	100	.15	.20
Cleveland Iron Co	..	....	....
Columbia Iron Co	100	....	....
Commodore Mining Co	..	..	....
Comstock Iron Co	100	....	....
Dayton Iron Co	100	....	....
Detroit Iron Co	25	.01	.02½
Elmira Land & Iron Co	..	.10	.25
Great Western Mining Co.	100	2.10	2.75
Hall Iron Co	..	....	....
Homestead Iron Co	25	.00½	.04
Horton Mining Co	10	....	....
Imp. Iron Mt. Mining Co.	..	....	....
Internat'l Development	..	....	22.50
Kakina Iron Co	25	....	....
Kentucky Iron Co	100	....	....
Lackawanna Iron Co.	100	.25	.45
Macomber Mining Co	..	....	....
McCaskill Mining Co	..	.01	.05
McKinley Iron Co	100	....	24.50
Mesaba C., L. & Ex. Co.	10	....	6.00
Mesaba Chief Iron Co	100	1.90	2.10
Mesaba Iron Co	..	....	.20
Mesaba Mineral Co	..	....	....
Minnesota Iron Co	..	42.00	55.00
Myrna Iron Co	10	....	....
Northern Light Iron Co	100	....	.25
New England Iron Co	100	....	....
Ohio Mining Co	100	....	6.00
Oneota Iron Co	100	....	....
Ophir, gold	..	1.00	2.00
Pennsylvania I. & S. Co.	100	.04	.10
Pioneer	..	....	1.00
Putnam	..	....	.80
Rouchleau Iron Co	100	.25	.50
Republic Iron Co	25	....	.50
Red Hematite Iron Co	100	....	.15
Sheridan Iron Co	..	....	.20
Standard Ore Co	25	.25	.50
Stowell Iron Co	10	....	....
Towanda Iron Co	100	1.50	2.00
Ver. & Mesaba Iron Co	..	....	1.00
Zenith Iron Co	25	.20	.40

MISSOURI.

St. Louis. Sept. 27.

Closing quotations:

	Bid.	Asked.
Adams	$0.40	....
American & Nettie, Colo	.25	$0.30
Bi-Metallic, Mont	....	4.00
Elizabeth, Mont	.15	.20
Granite Mountain, Mont	1.90	2.25
Hope	....	2.50
Leo	.01½	.02
Pat Murphy	....	....
Small Hopes	....	.50

PENNSYLVANIA.

Philadelphia. Sept. 28.

	Bid.	Asked.
Bloomington C. & C	....	....
Buck Mountain C	....	....
Cambria	$0 61	....
Connellsville Gas Co	....	....
Edison E. Light Co	1.15	$1.20
Excelsior B. & S	....	....
Locust Mt. C. & I	....	....
Penn. Salt	...	100
Penn. Steel	....	.52
Penn. Gas Coal	.47	...
Royal Gas	....	....
Westmoreland C	.52½	....

Pittsburg. Sept. 27.

	Bid.	Asked.
Bridgewater Gas Co.	$35.00	....
Chartiers Val. Gas.	7.00	$10.00
Con. Gas	48.00	52.00
Enterprise Mining Co	...	1.50
Hidalgo Mining Co	1.00	....
La Noria Mining Co	7.00	7.50
Luster Mining Co	6.63	7.25
Manufacturers' Gas	....	25.00
N. Y. & Clev. G. C	....	51.00
Ohio Valley Gas	....	30.00
Pennsylvania Gas	8.00	....
People's N. G. & P. Co.	....	15.00
Philadelphia Co	19.13	19.25
South Side Gas	....	25.00
Tuna Oil	....	....
Wheeling Gas Co	....	19.00
W'house Air Brake Co	115.00	116.50

London Quotations.

	Sept. 14, 1893. Buyer £ s. d.	Seller. £ s. d.
Alaska Treadwell, Alaska Ter	1 17 6	2 2 6
Almada & Tirito, Mex.	4½	7½
American Belle, Colo.	1 0	1 6
Big Creek, Nev	2 6	5 0
Bonanza Gold, Cal	5 0	6 0
De Lamar, Idaho	15 0	16 0
Elkhorn, Mont	9 0	10 0
Emma, Utah	6	9
Flagstaff, Utah	6	9
Golden Feather, Cal	8 6	9 0
Golden Gate, Cal	2 6	3 0
Golden Leaf, Mont. & N. M	3	9
Harquahala, Ariz	16 3	17 6
Holcomb Valley, Cal	10½	1 1½
Jackson Gold Fields	9	1 0
Jay Hawk & Lone Pine, Mont	5 9	6 3
Maid of Erin, Colo	1 3	3 9
Mammoth Gold, Ariz.	6	0 9
Mesquital del Oro, Mex., P	3 0 0	4 0 0
Mesquital del Oro, Mex., D	15 0	1 5 0
New Guston, Colo	6 0	7 0
New Montana, Mont.	2 3	2 9
Palmarejo, Mex	4½	7½
Pinos Altos, Mex	1 0	1 6
Poorman, Idaho	4 6	5 0
Rajah Gold, Can	3 9	6 3
Richmond Con., Nev.	6 3	8 9
Seven Stars, Ariz	15 0	1 0 0
Sierra Buttes, Cal	7 0	9 0
South Poorman, Idaho	1 5 0	1 0 0
Springdale Gold, Colo.	3 3	3 9
United Mexican, Mex.	2 0	3 0

Paris. Aug. 31.

	Francs.
Belmez, Spain	665.00
Golden River, Cal	130.00
" " parts	30.00
Laurium, Greece	565.00
Lexington, Mont	59.00
" parts	1.30
Nickel, New Caledonia	655.00
Rio Tinto, Spain	327.50
" " oblig	507.50
" " " 2d	501.20
Tharsis, Spain	112.50
Vieille-Montagne, Belgium	455.00

New York Mining Stocks.

(Latest quotations.)

	Bid.	Sept. 29. Asked.
Alice	$0.15	$0.45
Alta	0.10	....
Best & Belcher	0.50	0.70
Bodie	0.15	....
Breece	0.15	0.25
Brunswick	0.02	0.04
Bulwer	0.10	....
Caledonia, B. H	....	0.30
Cal. & Hecla Copper	....	0.60
Challar	0.20	....
Chrysolite	0.14	0.19
Colo. Cent. Consol	....	1.00
Comstock Tunnel	0.06	0.08
Con. C. & Va	....	1.15
Crown Point	0.20	..
Deadwood	0.90	....
El Cristo	....	0.20
Enterprise	....	1.50
Father De Smet	0.15	0.21
Gould & Curry	0.25	....
Hale & Nor	0.40	....
Holyoke	0.02	0.04
Horn Silver	2.45	....
Iron Silver	....	0.25
Kingston & Pem	0.15	0.25
La Crosse	0.03	0.05
Leadville	0.13	....
Little Chief	0.14	....
Mexican	0.50	....
North Star	0.70	....
Phœnix of Ariz	.06	....
Phœnix Trust Co	0.40	0.48
Plymouth Con	....	0.90
Potosi	0.25	....
Savage	0.30	....
Sierra Nevada	0.40	....
Sutro Tunnel	....	0.03
Union Cons	0.25	....
Utah	0.10	....
Yellow Jacket	0.35	....

ASSESSMENTS.

COMPANY.	No.	Dlnqt. in office.	Day of sale.	Amt. per sh're.
Amador, Cal	1	Oct. 12	Nov. 7	.05
Anchor, Utah	19	Aug. 23	Oct. 19	.20
Bahama, S.Dak	....	Oct. 28	Nov. 15	.001½
Bay State, Cal.	16	Sept. 28	Oct. 25	.02
Bodie T., Cal	17	Oct. 7	Oct. 24	.10
B. Camas, Utah	....	Sept. 9	Oct. 9	.02½
Br'nsw.Cn.,Cal.	6	Oct. 6	Oct. 24	.02
Caledonia, Cal.	17	Oct. 16	Nov. 15	.50
Clinton, Cal	2	Sept. 16	Oct. 2	.15
C'nfidence, Nev	23	Sept. 11	Oct. 2	.25
Crescent, Utah	....	Oct. 18	Nov. 10	.03
Dora Gold, Cal.	1	Sept. 25	Oct. 25	.05
Emmett, S.Dak	....	Oct. 19	Nov. 8	.002
Grey Eagle, Cal.	33	Sept. 6	Oct. 4	.03
Herold, Cal.	6	Sept. 16	Oct. 3	.01½
J'ck Rabbit, Cal	4	Sept. 15	Oct. 6	.05
Martin White, Nev	29	Oct. 26	Dec. 14	.25
Orleans, Cal	13	Oct. 9	Oct. 31	2.00
Overman, Nev.	68	Oct. 5	Oct. 26	.05
Potosi, Nev	39	Oct. 16	Nov. 7	.25
Richl'nd, S.D'k	....	Oct. 28	Nov. 15	.001½
Siskiyou Con. Q'cksilv., Cal.	7	Oct. 5	Oct. 27	.01
Tcirakoff, Cal	10	Sept. 28	Oct. 19	.01
Utah Con., Nev	19	Oct. 4	Oct. 25	.05
Yellow Jacket, Nev	55	Sept. 5	Oct. 9	.25

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